

WIRED

The Americanization of Sony

alt.sex.bondage

Comdex: The Moronic Inferno

June 1994

The super-secret
NSA answers
Clipper critics.
A Wired Exclusive.

SPY VS NERD!

The EFF is fighting for
your rights in cyberspace.
Just who are these guys?



\$4.95 / Canada 5.95



Don't lie to me.

X

You want the truth? Here it is. NEC's new MultiSpin® 3X CD-ROM readers are the best-performing readers on the market.

We were the first to introduce double speed. And now we improved our data transfer rate to 450 Kbytes/sec. and made a triple-speed reader. (Because that's what you wanted.) We also cut our access time to less than 200 milliseconds, added a 256-Kbyte continuous-flow cache, and a SCSI 2 interface.

Which means you can get your information three times faster than you can with standard readers, see smoother animation and video.



Our new MultiSpin CD-ROM readers are not only fast but interactive, with stand-alone audio controls and an LCD display on the front panel. So you don't have to rely on your computer to tell you what's going on (or not going on) with your reader.

They're compatible with Macs and PCs, as well as Kodak Multisession Photo CDs. And, they come with the longest commitment in the industry — a 2-year limited warranty.

For more information, call 1-800-NEC-INFO. Or for details via fax, call NEC FastFacts™ at 1-800-366-0476, request document #23768. We'll answer all your questions about CD-ROM. And you'll actually get to have an honest conversation for a change.

NEC

!!!

You called it walking

YOU WANT TO RUN THROUGH THE

now you call it exercise.

STREETS COMPLETELY NAKED.

You actually know what

YOU WANT TO SEE HOW FAR YOU

an annuity is. You find

CAN THROW THE ALARM CLOCK.

yourself

YOU WISH THE

wandering



AUTOBAHN STARTED AT THE

in hardware stores.

END OF YOUR DRIVEWAY.

You start a car pool.

YOU WANT TO GO TO LUNCH

Your needs begin to

AND NEVER COME

replace your wants.

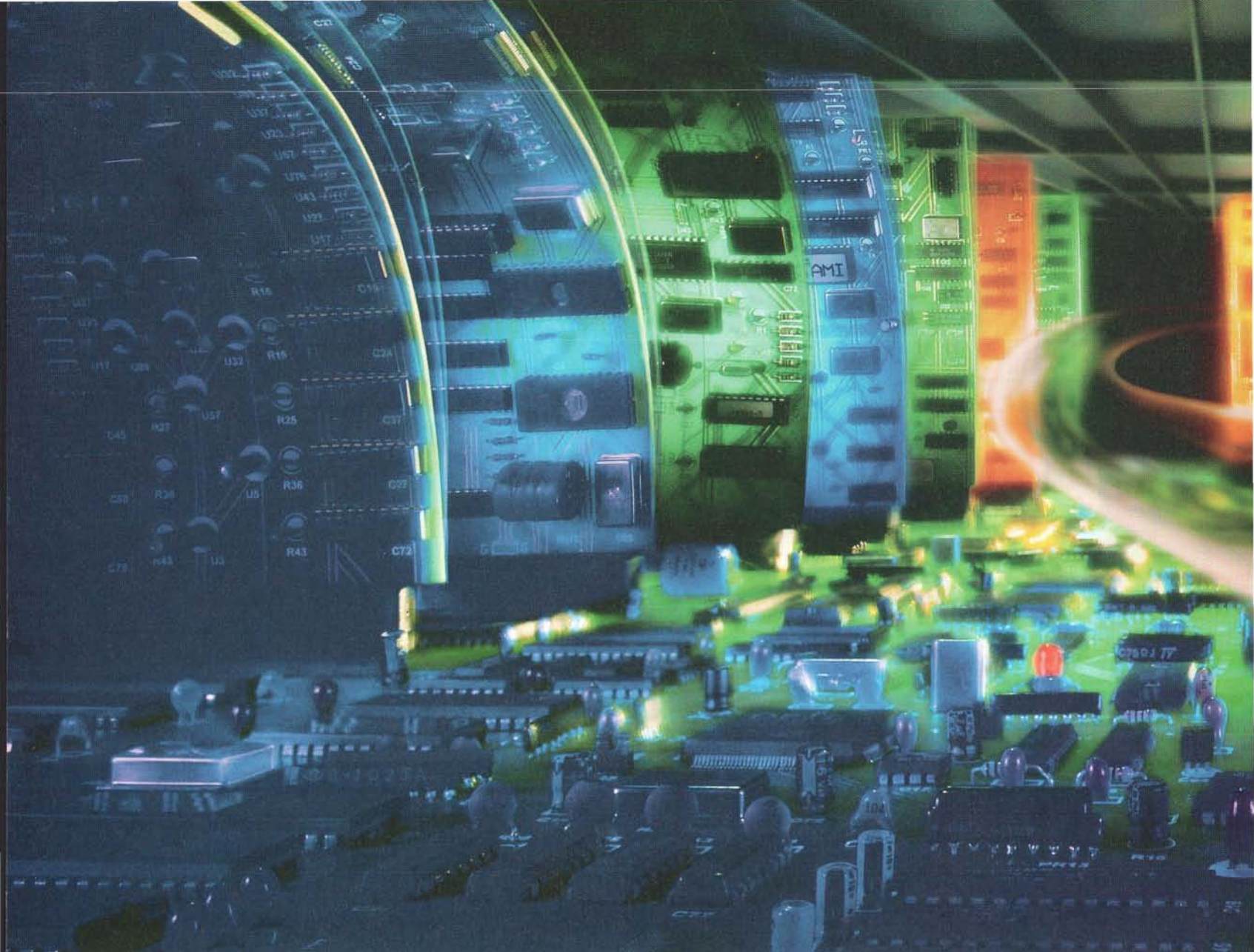
BACK.



Anti-lock brakes. **EIGHT SPEAKER STEREO.** Dual airbags. **TRACTION CONTROL.** Seats five.

172hp 6-CYLINDER ENGINE. German-engineered by Volkswagen. **The Jetta GLX VR6**

1800.444.8987 © 1994 Volkswagen Seatbelts save lives. Don't drink and drive.



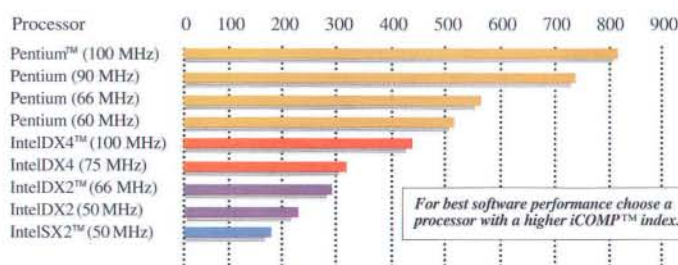
Imagine what it will

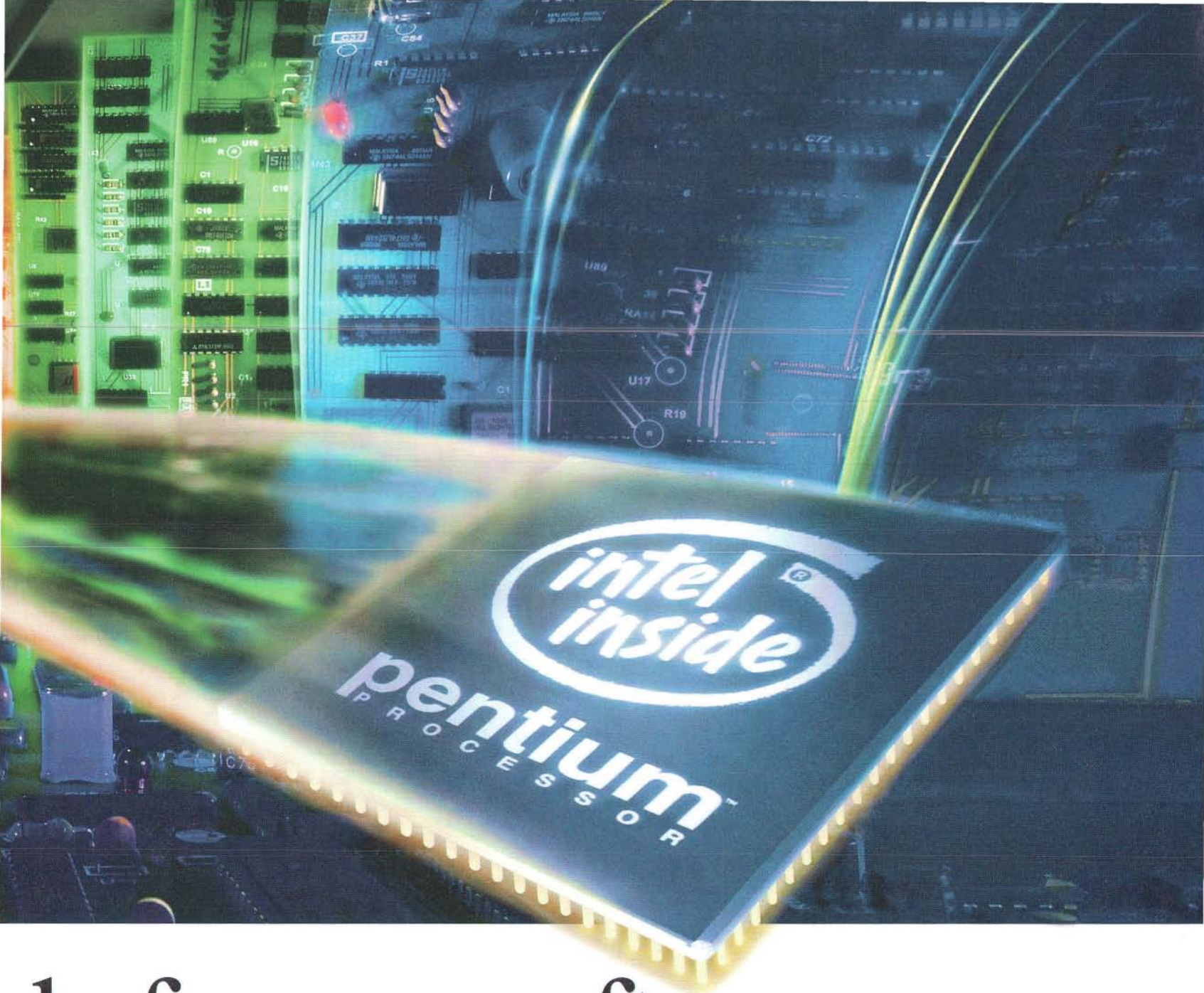


The Pentium™ processor will have an amazing effect on your favorite applications.

For starters, you'll be able to access them much faster. And even your most demanding software will respond quickly to your points and clicks. Pentium processor performance also means you won't have to sit waiting for graphics, charts and pictures to appear on the screen. They'll just be there.

*The Intel iCOMP™ Index of Relative Processor Performance**





do for your software.

All the leading manufacturers have introduced designs based on the Pentium processor, and these are not your average PCs. In addition to enhancements such as more RAM and larger hard drives, many feature important design improvements like the PCI local bus. That means they can handle the most innovative technologies, including applications like Intel's new ProShare™ document and video conferencing software.

And the best news is that these systems are available today, at surprisingly affordable prices.

Finally, because it's an Intel Inside® processor, you can be assured the Pentium processor is compatible with all the software written for the PC. Whether it's everyday word processing software, or CD-ROM multimedia applications.

So don't leave it to your imagination. See for yourself how your software responds to the power of the Pentium processor. For more information, call 1-800-395-7009, Ext. 114.

intel®

THE CONTURA AERO



7.5 x 10.25 x 1.5 INCHES¹

POWERFUL 486 PROCESSOR

BACKLIT VGA SCREEN

UP TO 6-HR. OPTIONAL BATTERY

INSTANT-ON FEATURE

OPTIONAL DOCKING BASE

ABOUT 3.5 POUNDS²

OPTIONAL PCMCIA FLOPPY DRIVE

FREE 3-YEAR WARRANTY³

MONOCHROME FROM \$1,399³

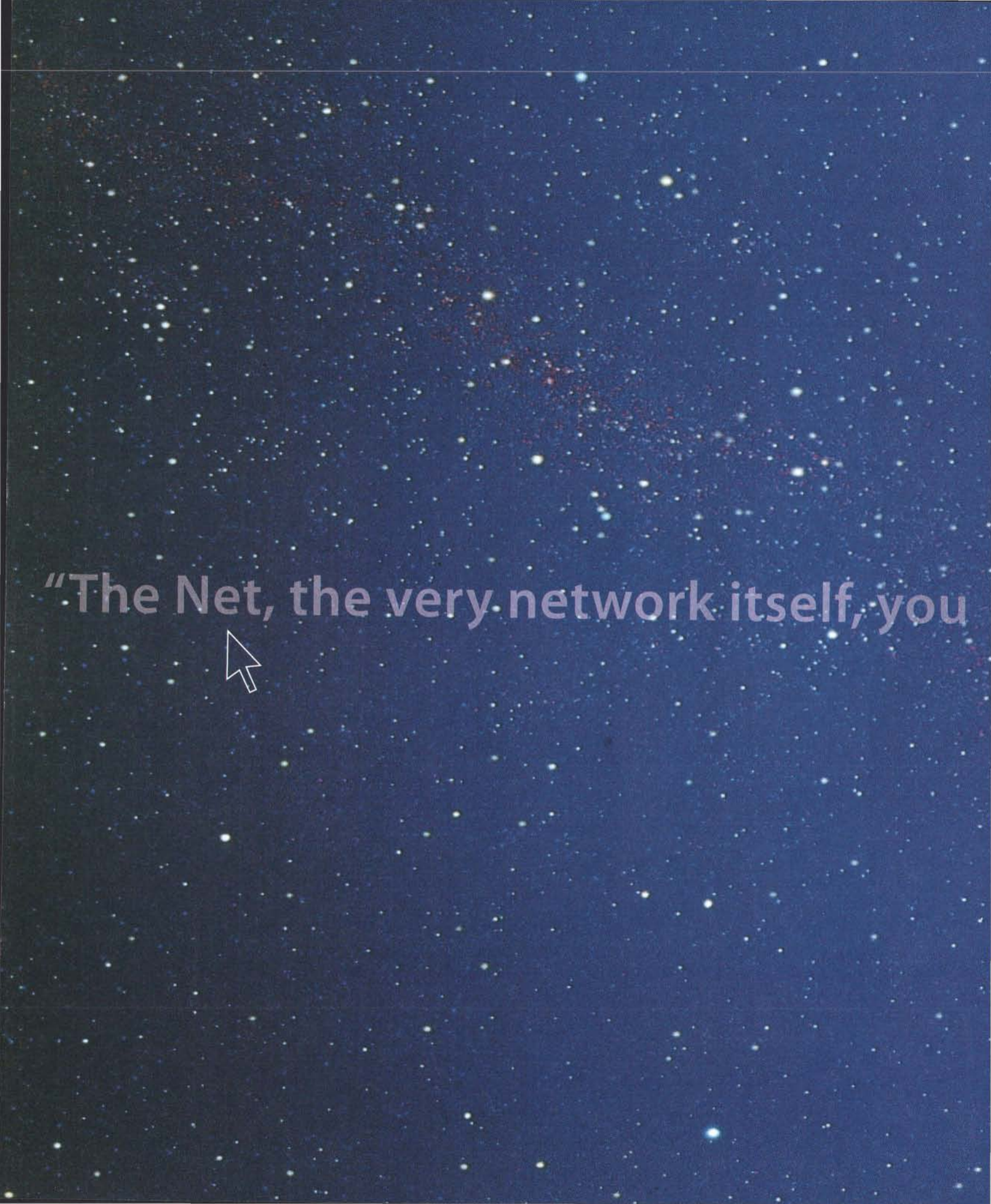
COMPAQ



© 1994 Compaq Computer Corporation. All rights reserved. Compaq, Contura Registered U.S. Patent and Trademark office. Aero is a trademark of Compaq Computer Corporation. For information via fax on our limited warranty, consult the Compaq Customer Support Center at 1-800-345-1518, select the PaqFax option and request document number 1217.



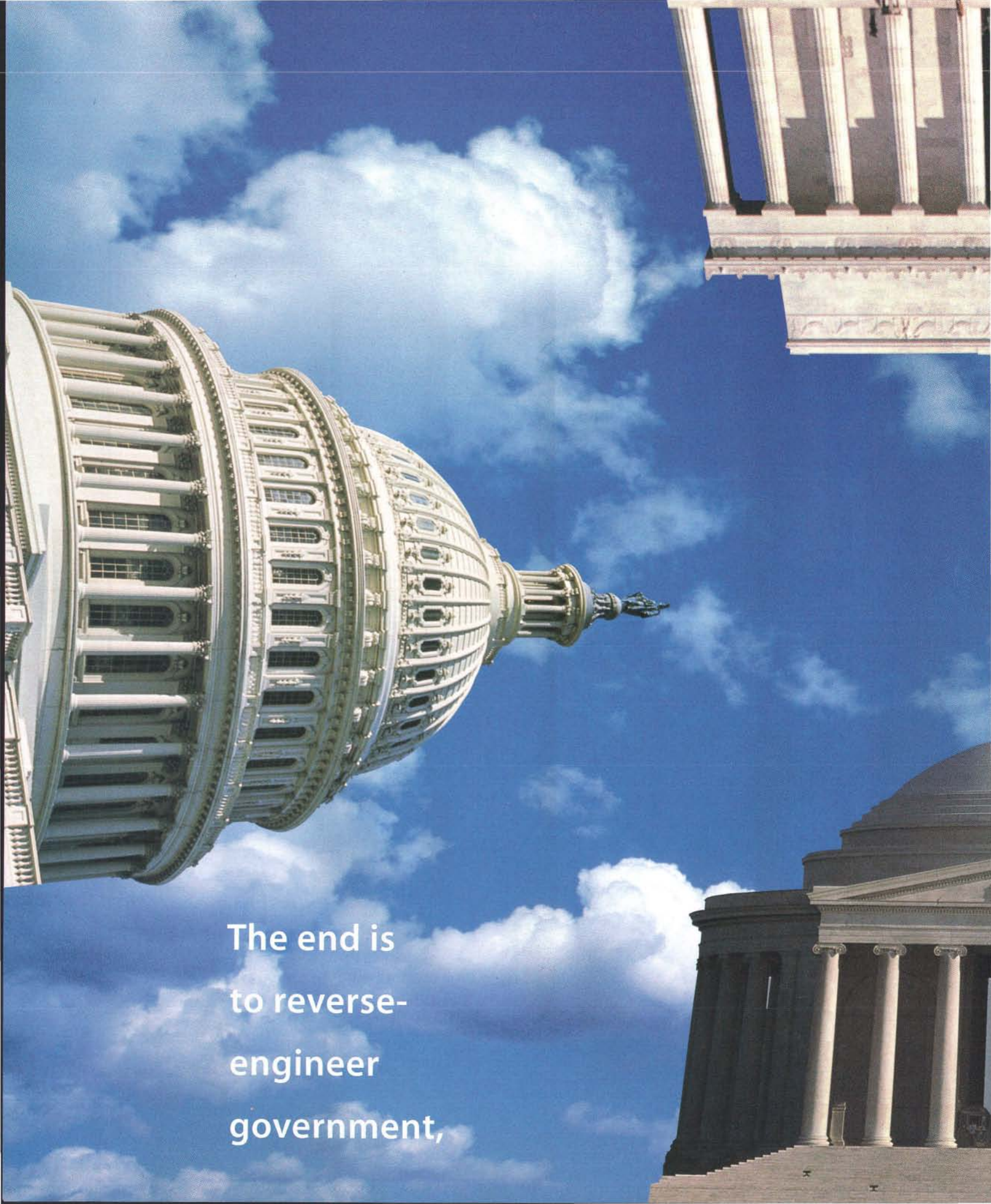
corporation. *Size and weight indicated are for the Contura Aero 4/25 Model 84 and Model 170. Model 4/33C pictured here weighs 4.2 lbs. **Batteries and certain options covered by a one-year warranty. Certain restrictions and exclusions may apply. For Aero product information, select document number 4010. †Estimated reseller price. Prices will vary. Model 4/33C pictured here starting at \$2,199. The Intel Inside logo is a registered trademark of the Intel Corporation.

A deep space photograph showing a vast field of stars against a dark blue background. A prominent, elongated, and slightly curved red nebula or star-forming region is visible in the upper-middle part of the image. The stars vary in brightness and color, with some appearing as bright white or yellow points and others as fainter blue or red dots.

"The Net, the very network itself, you



see, is merely a means to an end.....

A low-angle photograph of the U.S. Capitol dome and the Jefferson Memorial against a blue sky with white clouds. The Capitol dome is on the left, and the Jefferson Memorial is on the right. The text "The end is to reverse-engineer government," is overlaid on the lower left.

The end is
to reverse-
engineer
government,



to hack
politics
down to its
component
parts

and

fix



– Joshua Quittner,

it.”

on the Electronic Frontier

Foundation, p 77

- 
-
- 20 **Rants & Raves** Reader feedback
25 **Electric Word**
Bulletins from the front line of the Digital Revolution
35 **Fetish** Techno-lust

ELECTROSPHERE

- 40 **alt.sex.bondage** By Richard Kadrey
44 **The Electric Paperless Prototype** By Kevin Kelly
46 **Interrupt-Driven** By Evan I. Schwartz
50 **Anonymously Yours:** An interview with Johan Helsingius, by Joshua Quittner; and How to Launder Your E-mail, by Steven Levy
54 **Pomo to Go** By R.U. Sirius
60 **Wiring Africa** By Jeff Greenwald
64 **Turf Wars:** Why Japan's bureaucratic infighting is delaying construction of the country's information infrastructure. By Bob Johnstone

WIRED

2.06 June 1994

IDÉES FORTES

- 71 **Bad Attitude: Business as Usual on the Infobahn** By James Cappel
72 **Nine Principles for Making Virtual Communities Work** By Mike Godwin
-
- 109 **Street Cred**
123 **Net Surf**
126 **Deductible Junkets**
142 **Nicholas Negroponte**

Content

77



The Merry Pranksters Go to Washington

The Electronic Frontier Foundation is the preeminent defender of our civil rights in cyberspace. But just who *are* these people? By Joshua Quittner

82



Raster Masters

Enough with virtual reality—virtual hallucinations? By Jonathan E.

84



Moronic Inferno

Every year 2,000 exhibitors rent 2 million square feet of convention space in Las Vegas, the synthetic city. Every year more than 100,000 people stroll through this grand flea market to sell, buy, or promote a bit of the Future. Photos by Sylvia Plachy, text by Marshall Blonsky

92



Don't Worry Be Happy

Why Clipper is good for you. The super-secret National Security Agency responds exclusively in *Wired*. By Stewart A. Baker

94



The Americanization of Sony

The untold story of how Sony is rapidly becoming an American company. By Joe Flower

98



Vent

For designer Stephen Peart, it isn't look and feel, it's touch and feel. By Phil Patton

100



Start Me Up

After MCI, FTD, Airfone, and Inflight Phone, does Jack Goeken have yet another successful start-up in him? By Rich Karpinski

102



Rage

Every day for eight years, systems analyst Alan Winterbourne tried to find a job. And every day he failed. Then one day it all became too much. By Mark Nollinger

106



The Player

Strauss Zelnick left Fox for the new Hollywood in Silicon Valley. By Michael Goldberg

Cover illustration by John Plunkett with apologies to Antonio Prohias.
(Spy vs. Spy characters are © E.C. Publications Inc. 1994 and are used with the kind permission of *MAD* magazine.)

• OUTPERFORMS 486 AND
PENTIUM, CHECK.

• WORKS WITH MS-DOS,
CHECK.

• WORKS WITH WINDOWS,
CHECK.

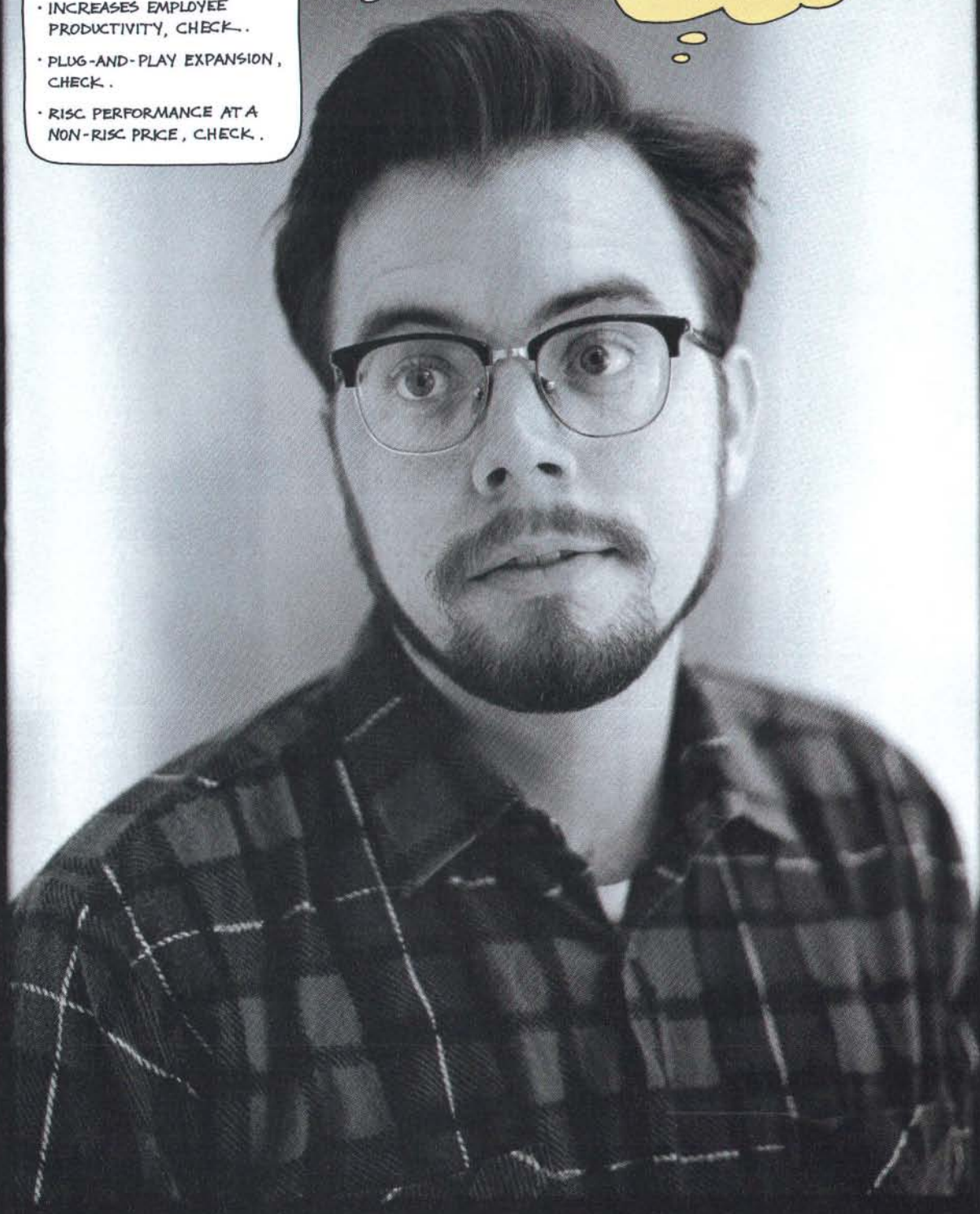
• MEETS CORPORATE NETWORK
STANDARDS, CHECK.

• INCREASES EMPLOYEE
PRODUCTIVITY, CHECK.

• PLUG-AND-PLAY EXPANSION,
CHECK.

• RISC PERFORMANCE AT A
NON-RISC PRICE, CHECK.

I COULD DO SOME
REALLY COOL STUFF.



Think of it as the Macintosh for people who thought they could never have a Macintosh.

Check your preconceptions at the door.

This isn't just a new family of Macintosh® personal computers. It's a whole new kind of personal computer.

A new architecture. A new chip. A new standard that exceeds previous personal computing standards — yet works with DOS, Windows and Macintosh.

Introducing Power Macintosh™. It's more powerful than a Pentium processor-based PC. It's more human than a Macintosh. It's the most powerful line of personal computers in the world.

The power of Apple, IBM and Motorola.

At the heart of Power Macintosh is the PowerPC™ 601 microprocessor: the first of a new family of ultra-high-performance RISC chips developed in a unique three-year collaboration between Apple, IBM and Motorola.

The RISC technology of Power Macintosh brings a whole new level of performance to personal computing. Software written to take advantage of its unique new capabilities, in fact, will run significantly faster than the same programs written for 486 or Pentium processor-based PCs.

From left, the new Power Macintosh 8100/80, Power Macintosh 7100/66 and Power Macintosh 6100/60.

Combine the power of RISC with the practical simplicity of a Macintosh personal computer, and the result is more work done in less time, with lower support costs.

The power to run MS-DOS, Windows and Macintosh software.

Many Power Macintosh configurations come bundled with SoftWindows™ from Insignia Solutions, an innovation that lets Power Macintosh run hundreds of off-the-shelf MS-DOS and Windows applications at 386 and 486 performance levels. (Of course, Power Macintosh runs thousands of Macintosh productivity programs, too.)

This is just the most recent example of Apple's commitment to making it easier for MS-DOS and Windows users to take advantage of Macintosh innovations.

The power of RISC for as little as \$1,819.*

These days, the whole personal computer industry is buzzing about the potential of RISC processor technology in PCs.

"My next computer will be a PowerPC. I was

using Intel-based machines long before the PC was a glimmer in IBM's eye, but as Emerson said, foolishly held consistency is the hobgoblin of little minds.... It's time for

Power Macintosh	6100/60	7100/66	8100/80
Processor	PowerPC 601	PowerPC 601	PowerPC 601
Speed	60 MHz	66 MHz	80 MHz
Memory	8MB to 72MB	8MB to 136MB	8MB to 264MB
Expansion slots	1 PCI or NuBus	3 NuBus	3 NuBus
Hard disk storage	160MB or 250MB	250MB or 500MB	250MB to 1GB
Video support	DRAM	DRAM, VRAM 1MB to 2MB	VRAM 2MB to 4MB
Networking	Ethernet	Ethernet	Ethernet
Apple Price	From \$1,819	From \$2,899	From \$4,249

All this plus built-in Macintosh PC Exchange™, AppleScript™, QuickTime™ software, TrueType™ fonts, 16-bit stereo sound, file sharing and more.

a change, and the time is now," wrote Bill Machrone in *PC Week*. "That next machine will probably wear an Apple logo.... Apple appears to be a good six months ahead of IBM in terms of [PowerPC] product development and software integration."

Call 800-732-3131, extension 600, for the name of your authorized Apple reseller.

And find out about the power that will change the way you think about Macintosh.

The power to be your best.®



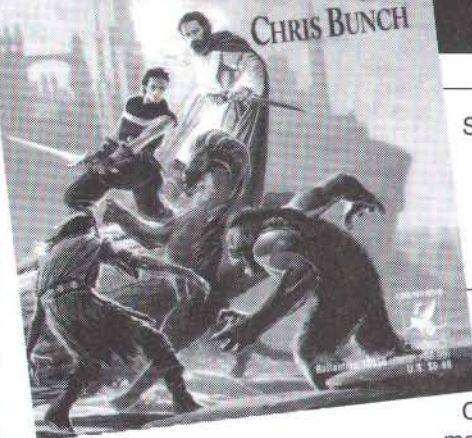
Introducing Power Macintosh.

Apple 

*Effective 3/14/94. Apple Price includes the Power Macintosh 6100/60 with 8MB of memory and a 160MB hard drive. For the sake of custom configuration, keyboard, monitor and mouse are sold separately. Unless bundled with a particular configuration, SoftWindows must be purchased separately. Retail prices may vary depending on location. ©1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, Macintosh and "The power to be your best" are registered trademarks of Apple Computer, Inc. AppleScript, Macintosh PC Exchange, Power Macintosh, QuickTime and TrueType are trademarks of Apple Computer, Inc. PowerPC is a trademark of International Business Machines Corporation, used under license therefrom. Windows is a trademark of Microsoft Corporation, and SoftWindows is a trademark of Microsoft Corporation used under license.

The FAR KINGDOMS

A Mythic Tale
BY ALLAN COLE
AND
CHRIS BUNCH



**"GLORIOUS SWASH-
BUCKLING...ABSOLUTELY
RIVETING...THE FIELD'S
PAGE-TURNER OF
THE YEAR."
—Locus**

Sample chapter of Cole & Bunch's upcoming epic, *The Warrior's Tale*, available on-line—gopher to gopher. panix.com (Del Rey Books directory) or read it in CompuServe's Fantasy Library.

Read the Del Rey Internet Newsletter!
Available monthly on rec. arts. sf. written, the Panix gopher (gopher. panix.com), CompuServe's Library 5, GEnie, or by free e-mail subscription (ekh@panix.com for details).

A Del Rey® Paperback



#1 in Science Fiction and Fantasy
Published by Ballantine Books

WIRED

Editor/Publisher: Louis Rossetto
President: Jane Metcalfe

Executive Editor: Kevin Kelly
Managing Editor: John Battelle

Creative Director: John Plunkett

Senior Columnist: Nicholas Negroponte

Associate Editor: Mark Frauenfelder

Section Editor: Kristin Spence

Copy Chief: Rebecca Freed

Copy Editors: J. Caleb Donaldson, Constance Hale

Research Editor: Martha Baer; Editorial Assistants: Andy Rozmiarek,

Jessie Scanlon; Interns: David Pescovitz, Caitlin Pulleyblank

Contributing Editors: John Browning (Europe), David Jacobs (Fetish), Linda Jacobson (Virtual Worlds), Bob Johnstone (Japan), Bernie Krisher (Asia)

Contributing Writers: John Perry Barlow, Paulina Borsook, Stewart Brand, Gareth Branwyn, Douglas Coupland, Joe Flower, Simon L. Garfinkel, William Gibson, Michael Goldberg, Jeff Greenwald, Connie Guglielmo, John Heilemann, Joi Ito (Japan), Mitchell Kapor, Jaron Lanier, Brenda Laurel, Jacques Leslie, Steven Levy, Jules Marshall, Brock N. Meeks, Pamela McCorduck, Ted Nelson, Phil Patton, Charles Platt, Josh Quittner, Jef Raskin, Howard Rheingold, Dan Ruby, Rudy Rucker, Paul Saffo, Michael Schrage, Peter Schwartz, R.U. Sirius, Burr Snider, Steve Steinberg, Neal Stephenson, Bruce Sterling, Gary Wolf

Senior Designer: Thomas Schneider

Designers: Barbara Kuhr, Tricia McGillis

Photo Editor: Amy Howorth

Design Assistant: Andrea Jenkins; Intern: Marla Aufmuth

Contributing Artists: Erik Adigard, Stuart Cudlitz, Stan Gaz, Jim Ludtke, Nick Philip, Big Daddy Ed Roth, Steve Speer

Contributing Photographers: Henry Blackham, William Faulkner, Steve Fugikawa, Leslie Hirsch, Blair Jensen, Floris Leeuwenberg, William Mercer McCleod, James Porto, Neil Selkirk, Bill Zemanek

Production Art Director: Eugene Mosier

Production Artist: Charlotte Ng; Promotion Design: Jim Frew

Associate Publisher: Kathleen Lyman +1 (415) 904 0659

Advertising Manager: Simon Ferguson +1 (415) 904 0665

Advertising Associate: Julie Estes +1 (415) 904 6243

Advertising Associate: Holly Patterson

All advertising inquiries: +1 (415) 904 0659

Assistant Publisher: Todd Sotkiewicz

Publicity & Promotions Director: Taara Eden Hoffman

Operations Manager: Amy Critchett

Director of Circulation: Greg Jones

Circulation & Fulfillment: Ed Rigaud

Single Copy Sales Director: George Clark

Customer Service: Kristy O'Rell; Fulfillment Assistants: Sean Manseau,

Kelly Martin, Maida Stupski, Jocelyn Williams

Bookkeeper: Nori Castillo; AP Clerk: Dianna Jacobs

Executive Assistant: Ann Hess; Receptor: Tracy Cohen

Dollars & Sense: Ian Stewart

Chief Technology Officer: Andrew Anker

Online Tsr: Jonathan Steuer

Online Ambassador: Will Kreth (Info@wired.com)

Online Gardener: Julie Petersen; Online Serf: Matthew Nelson;

Databasso Profundo: Michael Gold; Unix Sherpa: Brian Behlendorf;

Net Hacking: Tom Jennings; MISchief: Nielsen; Network

Administrator: Andrew Waegel

TLC: Joy Culbertson

Coach: Charlie Jackson

Patron Saint: Marshall McLuhan



"One of the nicest things about being big is the luxury of thinking little."

©1994 Wired Ventures Ltd. All rights reserved.

Reproduction without permission is prohibited.

Wired (ISSN 1059-1028) is a publication of Wired Ventures Ltd.

Printed in the USA.

Registered for GST as Wired USA Ltd. GST# R134795954

Submissions: Enclose a SASE when sending for writers guidelines.

E-mail: guidelines@wired.com. Digital submissions preferred. Wired

assumes no responsibility for unsolicited material.

For subscriptions, e-mail subscriptions@wired.com or call

(800) SO WIRED, +1 (415) 904 0660 outside the US.

Individuals: US\$39.95 (12 issues), \$71 (24 issues)

Can/Mex US\$64 (12 issues), \$119 (24 issues) (GST incl.)

Foreign US\$79 (12 issues), \$149 (24 issues)

Institutions: (libraries, companies larger than 20 employees, etc.)

US\$80 (12 issues), \$143 (24 issues)

Can/Mex US\$103 (12 issues), \$191 (24 issues), (GST incl.)

Foreign US\$110 (12 issues), \$210 (24 issues)

Or mail check to Wired, PO Box 191826, San Francisco, CA 94119-9866.

Foreign subscriptions payable by credit card, postal money order in

US\$, or check drawn on a US bank.

How to reach Wired: 544 Second St., San Francisco, CA 94107-1427,

+1 (415) 904 0660, fax +1 (415) 904 0669.

Online: Advertising: advertising@wired.com.

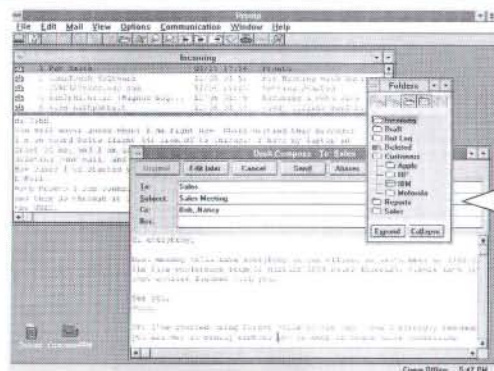
Editorial: editor@wired.com. Other: info@wired.com.

Mailing lists: Wired may rent its mailing list. If you do not want your

name included, please let us know by phone, mail, or e-mail.

Design: Plunkett + Kuhr ABC Membership Applied For.

Remote Windows to UNIX E-Mail



Pronto
Ideal for
Internet Users

**Plug and play - No host software
Synchronizes PC and UNIX mail and folders**

- ☐ Superb user interface
- ☐ Connects via asynchronous line, no SLIP/PPP required.
- ☐ Full off-line mail processing
- ☐ Word wrapping & spell checking
- ☐ Signature files, aliases
- ☐ Built-in terminal emulation and file transfer
- ☐ Communication scripts
- ☐ 30 day money back guarantee.

CommTouch Software, Inc.

The Remote E-MAIL Company

Tel: 1-800-7PRONTO (777-6686)

415-578-6580 Fax: 415-578-8580

E-mail: pronto@commtouch.com



SILLY WATCH.
IT THINKS IT'S A LAMP.

The IndiGlo night-light illuminates with a push of a button. So for \$44.95 you not only get a beautiful watch, you get a lamp. For retailers, call 1-800-367-8463.

INDIGLO™
BY TIMEX

TIMEX. IT TAKES A LICKING AND KEEPS ON TICKING®.



INTRODUCING OneWorld Fax NETWORK FAX SERVER

Talk about perception versus reality. Like something out of a science fiction movie, faxing came into being to move documents along at the speed of light. But in reality, "moving" hasn't been the activity most associated with faxing. "Waiting" has. Waiting for the document to print. Waiting in line. Waiting for the fax to go through. A situation where things can get so bottlenecked, an entire office can be reduced to a crawl.

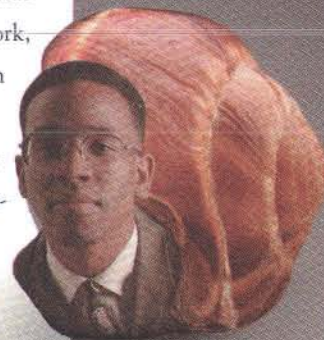
Well, at Global Village Communication,[™] we're happy to report a way to get everyone up to speed again.



And because OneWorld Fax sends faxes in the background over the network, you don't tie up your computer when faxing. You keep right on working.

You save money, too: Printing costs fall when you fax from your computer. Phone bills can be reduced since faxes can be scheduled to take advantage of off-peak phone rates. And, of course, you save valuable time.

And if all this news weren't good enough, OneWorld Fax is easy to install. Everything you need—all the hardware and software—is built into a single,



THE PROMISE OF FAX MACHINES IS
TO HELP PEOPLE WORK AT A FASTER PACE.
THEN, OF COURSE, THERE'S THE REALITY.

With something we call OneWorld[™] Fax, the fax server that lets everyone on a network of Apple Macintosh computers fax right from their desk.

With OneWorld Fax, everyone in the office can send faxes—to one person or to many—with just a few clicks of the mouse. It's as easy as printing, thanks to the industry-acclaimed GlobalFax[™] software used in OneWorld Fax.

self-configuring package smaller than a toaster. Anyone can install it, in a matter of minutes.

But, before you go, here's something else to consider: OneWorld Remote Access—a complete, easy-to-use ARA server for providing access to AppleTalk networks from remote Macintosh and PowerBook computers.

So. There you have it. Two ways to get everyone in your office up to speed again. Now isn't it time you got moving? For more information and for the Global Village dealer nearest you, call 1-800-736-4821, ext. 4246.



GLOBAL VILLAGE
COMMUNICATION

Rants & Raves

Economy of Ideas: Round Two

Notwithstanding Mr. Barlow's stature and respect naturally due one of cyberspace's pioneers, let me offer up a critical review. (See "The Economy of Ideas," *Wired* 2.03, page 84.)

Copyright law states very clearly that an idea is protected at the point it is placed in physical form. That "physical form" can be digital expression. Barlow does not dispute that, yet he says that the mutability of electronic information somehow makes the expression different. This, of course, overlooks (or ignores) the point that fixation in electronic media is fixation for copyright purposes.... Yet Barlow says that because Net-based writing is impermanent, and because of what he considers a natural tendency of members of the Net culture to ignore others' legal rights, copyright law is outmoded, and, at the least, must change. Change, he says, or perish.

I fear, more than anything else, Barlow reminds me of William Roper, Sir Thomas More's son-in-law, who in Robert Bolt's *A Man for all Seasons* insists that the law of England be set aside in order to get at More's enemy, Thomas Cromwell. More, saying that it would make no difference if Cromwell were the Devil himself, asks Roper, "What would you do? Cut a great road through the law to get after the Devil?... And when that last law was down,... do you really think you could stand upright in the winds that would blow then? Yes, I'd give the Devil benefit of law, for my own safety's sake."

What Barlow mentions nowhere is that there is a world of well-protected, privately compiled and mass-distributed information already on the Net. I refer to the online services that have not only depended upon traditional copyright law but upon licenses to protect their material, even though widely available since 1970.

Barlow says that the same culture that led to widespread hacker penetration of copy protection schemes (and now various hacker penetrations of the Net itself) will lead to defeat for technology-based copyright protection. If this is in fact the case, however, I fear the Net will remain the domain of low-intensity information such as items in the public domain, new e-journals, and the ubiquitous e-mail for which signal-to-noise ratios are distressingly low.

So, in the end, Barlow gives us (1) a romanticized

vision of information in cyberspace, (2) a prediction that chaos will reign where copyright should pertain, and (3) a conclusion that no solution exists for this state of affairs. I'm with Sir Thomas: Give me the law.

Stephen L. Haynes
Minneapolis, Minnesota

John Perry Barlow responds: *The physical and virtual worlds differ fundamentally. If I felt that laws written for the physical world were likely to work well in cyberspace, I'd be right there with Sir Thomas. But wishing don't make it so.*

This is not to say that I believe chaos will reign or that I would take some perverse delight in such a turn. People

want order, and when it can't be imposed, it generally emerges from the collective will. I believe that a future Thomas More would say, "In the absence of laws which can be enforced, give me ethics."

It's been obvious to many people that patents and copyrights don't work real well for nonphysical things. As Barlow points out in *Wired* 2.03, it really only works for print/image/etc. because, for all of history, protectable content was so attached to the physical medium that most people never made the distinction.

The basic confusion of form with "content" obscures where the problem is; for centuries, paper and printed word were considered one, the laws defaulted to cover the combination, habit considers them one.

Instead of trying to preserve current turf, by dragging

Subscription information subscriptions@wired.com
Rants & Raves rants@wired.com
Editorial guidelines guidelines@wired.com
Editorial correspondence editor@wired.com
Net Surf contributions surf@wired.com
Wired Ware (T-shirts, etc.) ware@wired.com
Advertising sales advertising@wired.com
General questions info@wired.com
E-mail server infodroid@wired.com

things back into the flawed 19th-century model which only worked by accident, it's more useful to ask: What sort of nonphysical creative thing can I produce that cannot be taken from me?

That thing is *attention* – I can give it to you, but you cannot take it from me. As much as you might copy my work (book, program, etc.) it is static. Paco Xander Nathan has pointed out that attention is the monetary unit in an information economy. I think it's also a key to working out systems that allow commerce in a nonphysical environment.

Information flows and self-levels just like water. Trying to stop it has obviously not worked, and copy-protection just irritates users. This is vestigial, historical emphasis on medium confused for content.

What is interesting is the transition – from no information to some information – attention. You get my attention (money frequently helps), you tell me what you want from me, I produce information to satisfy your need. Transaction complete. This isn't new – authors get commissioned to write magazine articles; musicians hired to make soundtracks, fill out bands; artists do custom murals on buildings; the list is endless. You can copy specific instances of work, but you can't reproduce their work-generation process, i.e., their creativity. And in the cases where you can come close, it's usually easier to just hire them.

Support, interaction, customization, design, fixes – this is attention. You can't copy it. "Bits" are static. I used to sell

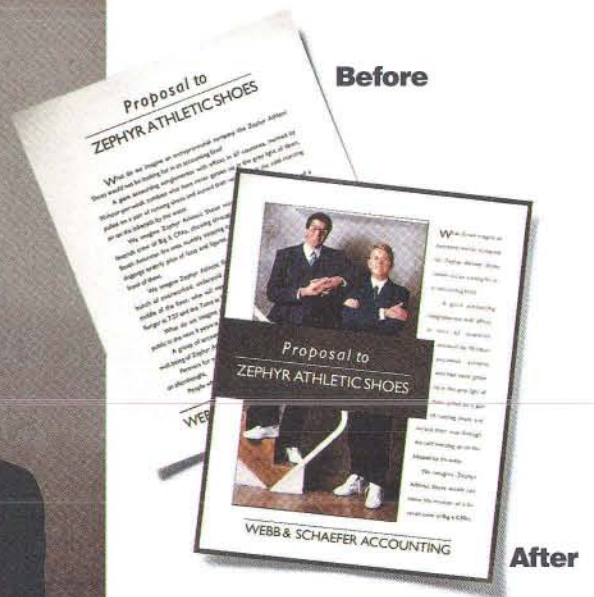
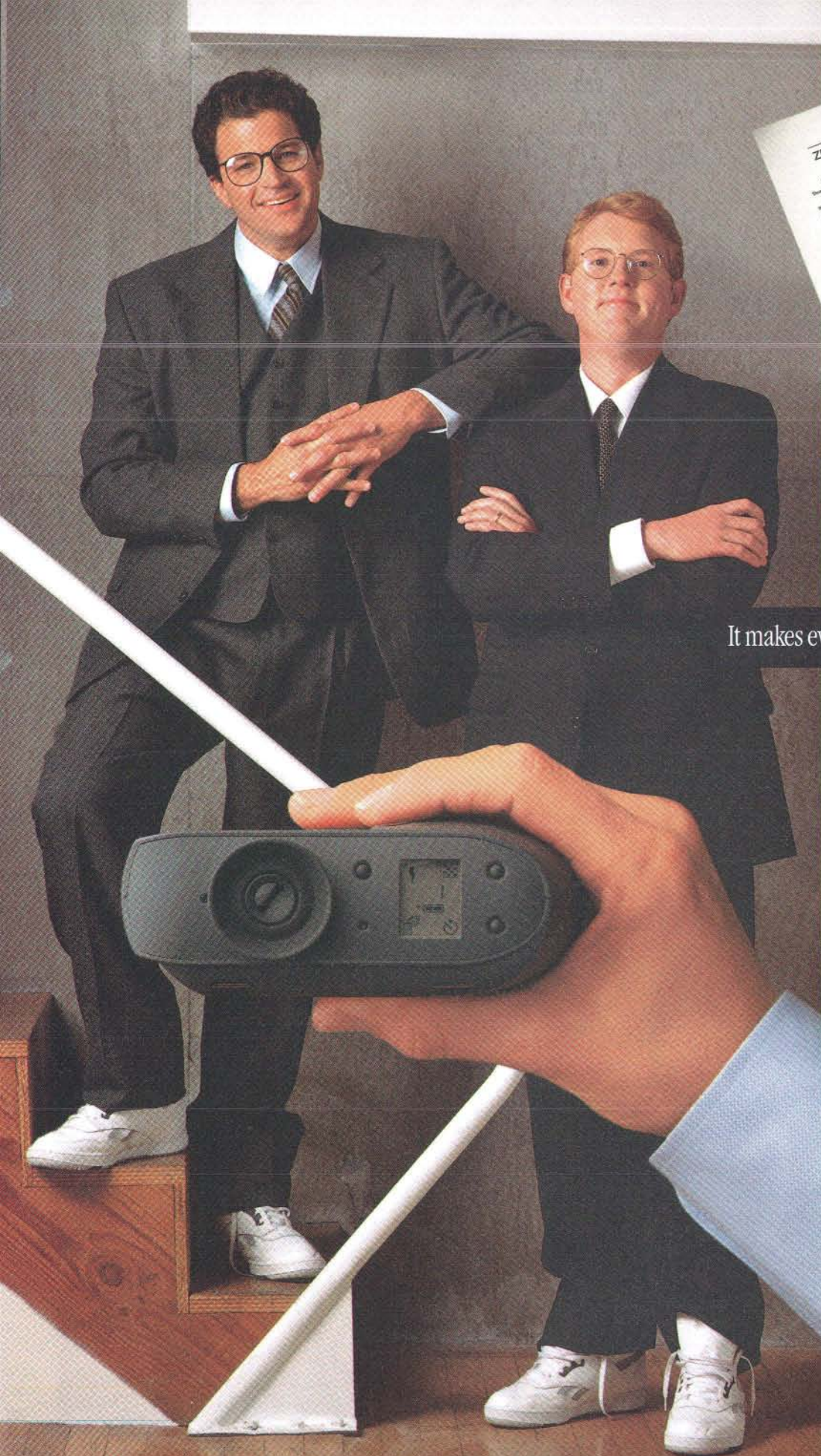
Fido/FidoNet with a tiered pricing scheme. First, free. Take it, run with it, have fun, ask no questions. Then two levels of pay-for; hobbyist and commercial. That got you a printed book with lots of details, and I'd talk to you on the phone. Finally, for reasonably serious money, I'd make you a customized version. Then you got pretty good support.

Attention is the generation of personalized information. Communication is the medium in which attention grows.

While it's possible to get around the expense of dealing with authors or their representatives or other authorities, the benefit devalues rapidly the further you get from the source.

Tom Jennings
tomj@wps.com





It makes everything you do look better than before.

Point, shoot, plug it into your computer, and presto — you've discovered Apple digital photography. It's the fastest, easiest way to give everything from proposals to catalogs more impact. No film. No waiting. Just brilliant 24-bit color or sharp black-and-white photos that will make even a modest memo stand out.

The Apple® QuickTake™ 100 comes with everything you need, from software to cable. And at \$749*, accountants love it, too. To locate the authorized Apple reseller nearest you, give us a call at 800-732-3131, ext. 550.

The New Apple QuickTake 100 Digital Camera



*Apple Price as of 3/1/94. Actual retail prices may vary depending on location. © 1994 Apple Computer, Inc. All rights reserved. Apple and the Apple logo are registered trademarks of Apple Computer, Inc. QuickTake is a trademark of Apple Computer, Inc.

John Perry Barlow responds: *As usual, Tom Jennings is right. And his elegant proposal that attention is a kind of medium fits succinctly with my theory that protection will move to the relationship between provider and market. This is already the case with billions of dollars worth of intellectual property sold by lawyers, architects, and other professionals to their clients. It's hardly useful for an architect to copyright her plans for your house.*

Mr. Barlow, I just read and enjoyed your *Wired* piece and was thinking that your analysis, while IMHO it is absolutely dead on, suffers from one debilitating metaphor. Throughout your argument you objectify information while you simultaneously try to undermine that objectification. That is, you argue effectively that information is not a thing but a process/relationship/verb; however, you cast information as a thing throughout the piece.

I think the danger in how you characterize information is this: Many people are utterly convinced that information is a thing – a commodity that can be transferred – and they base their actions on this flimsy foundation. ... While you argue against the concept of information transfer, you actually argue against yourself by continually casting information as an agent, not an action. Information doesn't want to be free, informers do. The meanings are rhetorical in nature: They are negotiated, they are constantly constructed and reconstructed during the interactions among participants in the communicative acts. By saying things like "information wants to change" etc., you give agency to the code – even though your purpose is just the opposite.

Stephen Doheny-Farina
sdf@craft.camp.clarkson.edu

John Perry Barlow responds: *It's a problem of my personal semantics. I call a lot of nonthingish things things, like, to use a big one, this Thing Called Love. Language, or at least English, is limited in its ability to describe the nonspecific action or state of being.*

Actually, since I believe information is a life form, there are many cases where information may be seen to act upon....uh...things.

As yet another constipated copyright essay landed on my desk today, I wished I was back at Chez Panisse last night with your "Economy of Ideas" article and my 350 ml of wine. Copyright is essential business fodder here at Dialog (where I run the CD-ROM products), so I was a motivated reader, but I also thought I heard some nice echoes of the Tao Te Ching. I'm thinking of text that says the more laws and edicts you promulgate, the more thieves and robbers you create. Also, the scarcer and more valuable you make anything, the harder it is to keep from thieves.

Anyway, I think it is going to be very, very tough sledding to change the intellectual property paradigm. If we go to patronage, the obvious bad choices are governments or wealthy individuals. So what would practical, equitable patronage be?

Barry Richman
barry@netcom.com

John Perry Barlow responds: *Mr. Richman identifies one of the key problems of the future. It was solved in the past by a sense of responsibility among art patrons. The only reason ordinary people were able to hear the recent works of Bach or behold a new Michaelangelo sculpture was that their patrons believed they were morally bound to share those miracles.*

Note from the Editors: *John Perry Barlow is still struggling to answer the deluge of mail he is receiving in response to "The Economy of Ideas," most of it supportive. He begs the indulgence of his correspondents and is grateful for their attention. So far, he has received more than 200 e-mail messages and letters, most of them long and thoughtful. More arrive daily. This is the most mail he has ever received as a result of a print publication of his work.*

Ticket to Ride (but in a cop car? ...)

It was with a great deal of interest that I read Simson L. Garfinkel's absorbing, well-researched, and ultimately scary piece on the use of the drivers' license as a tool of social control ("Nobody Fucks With the DMV," *Wired* 2.02, page 84).

You see, I had only a few hours earlier emerged from a harrowing stay of more than sixteen hours in a piss-soaked lock-up in Fairfax, Virginia, denied the right to bail myself out or, for ten hours, even to make a phone call to a lawyer or friend. Missed a professional conference, important meetings, and a night's sleep, too.

My crime: two parking tickets in Brookline, Massachusetts.

It's good *Wired* devotes such serious attention to the way computers have empowered the state to control the basic fabric of our lives. Better still would be articles on how we as citizens can reclaim the technology and use it to protect ourselves from a level of power the state never was intended to have.

Otherwise *Wired* would leave us with a vision of happy cybernauts spinning their own self-referential digital communities, thinking it makes them free, all the while falling further and further under the control of people and institutions who are probably relieved we are looking into a computer screen instead of at them.

Donald Frazier
Newton, Massachusetts

Clipped Behind the Iron Curtain

The widespread discussion on the Clipper Chip in both US media and relevant discussion lists is limited mostly to American people. Therefore, I wish to add my small opinion from behind the former Iron Curtain, based upon my lifetime experience of living in Poland.

For years we lived here with the overwhelming impression of being under constant surveillance by omnipotent secret services maintained by the undemocratic regime supported by Moscow. For instance, people were afraid not to take part in the sham elections. The regime was also afraid in every way of people's informal associations. Participants in unofficial gatherings were photo-

graphed and videotaped with the hope of identifying them. The telephone was always considered insecure and all international calls were assumed to be wiretapped. As the published files of East Germany's STASI showed, these fears were not groundless.

(Cyberspace) provides really a unique experience to have the freedom to send out (to the West) everything one wishes – just after the period of total censorship. Recent developments in cryptography and the work of the Cypherpunks have enabled, perhaps for the first time in mankind's history, the opportunity to create global communities that evade governments' surveillance. The governments may slow the outburst of universal privacy but will not evade it. In the Clipper's case, I agree with the conclusion of *Newsweek* (February 14, 1994), which suggests that Americans will use foreign-made devices, and foreigners will be reluctant to use US ones that can be wiretapped.

Doodek
via an anonymous mailer

Commercialization or Commodification?

In "Is Advertising Finally Dead?" (*Wired* 2.02, page 71), Michael Schrage gets very excited about the idea of advertisers using context-sensitive "viruses" lurking among the recesses of cyberspace, ready to latch onto whatever you're watching or reading to promote something.

Schrage's attempt to dismiss criticism of the idea by comparing his viruses to postal junk mail doesn't work. No one opens our personal letters, reads them, and remails them with "related product information."

One of the reasons I use and pay for access to the Internet is to go where everything hasn't been tested before a focus group. I don't mind paying for access; and remember, there's a difference between commercialization and commodification.

Bill Humphries
whump@delphi.com

Undo

• In our review of *Telegeography* 1993 (*Wired* 2.03, page 26) we left out some important bits: +1 (202) 467 0017, and 4579195@mcimail.com. Also, it is estimated that global telephone traffic in 1992 exceeded 5.5 trillion minutes. • Sandy Sandfort reported ("Security Through Obscurity," *Wired* 2.03, page 29) that Stego was shareware available from the *sumex-aim* archive under the *info-mac/Recent* directory. It has been moved to the */cmp* (compression tools) folder. • There was a small factual error in our review of *Sense of Snow* (*Wired* 2.04, page 115): Smilla's father was actually an anesthesiologist. • Three's a charm...on the cover of *Wired* 2.02, that's a Philips CD-i remote – and it's spelled with one I.... • In *Wired* 2.02, page 32, we inadvertently printed Kevin Sullivan's first name as "Keith."

Send your Rants & Raves to:
Snail mail: Wired, PO Box 191826
San Francisco, CA 94109-9866
E-mail: rants@wired.com

A sepia-toned photograph of three dancers in white tutus performing on a wide, ornate staircase. The dancer on the left is in a dynamic pose, leaning back with one arm extended. The dancer in the center is moving up the steps, holding the hand of the dancer on the right. The dancer on the right is at the top of the visible stairs, with one arm raised. The background features lush trees and a classical architectural element, possibly a balustrade or urn, on the right side.

Chateau Marmont
hollywood

Hotel and Bungalows

(213) 656-1010

e-mail: CHATEAULA@aol.com

Crime-Fighting Computers

The disappearance of friendly local beat officers is bemoaned the world over. One little-known reason for their disappearance is the massive amounts of paperwork just one arrest or report requires. To combat the trend, the Dutch have devised an innovative system that keeps cops on the street and lets multimedia computers perform many of those desk-bound administrative chores.

A pilot test of the new system in the Netherlands province of Friesland has put computers on street corners; citizens can walk right up to one and report a crime, much like getting cash from an ATM. In a survey taken six months into the test, 85 percent of respondents felt "very positive" about the boxes, said Friesland police spokesman Peter de Weert.

In the first month, 3,000 reports were made on just one of the computers. The public's response has been so enthusiastic that police are not even waiting for the end of the test to bring the rest of the Netherlands online. And law enforcement agencies in France, Norway, the UK, and Hungary are already looking at the system.

Bike theft, car-radio theft, and auto accidents account for most of the computer reports. The compucops, costing about 30,000 to 35,000 Dutch guilders (US\$16,000 to \$18,600), are built around a 486 computer. A screen displays images of lost or found items or missing or wanted people, and it allows ten categories of minor offenses to be reported. ("We would not expect someone to report a bank robbery on one," says De Weert.) Reports are simply typed into the machine – a modem switches between data and voice on the same phone line. The use of images and the ability to print out greatly improve on the simple phone: You can see the police agent you're speaking to and access material best represented visually (such as route plans, crime prevention information, forms).

To date, the only vandalism the boxes have sustained is flourishes of graffiti. Rural Holland is one thing – could it work in, say, New York? "I don't know the place well, but why not?" says De Weert. (Like he said, he doesn't know the place.) Friesland Police: +31 5897 5597.

– Jules Marshall



The Watergate Way-Back Machine

≡III Show Me: The talk of Digital World this year isn't the show, it's the accompanying Interactive Media Festival, a gallery of 25 award-winning interactive works to be displayed June 6 to 8. In fact, many feel Digital World will have to prove it has not turned from visionary schmoozeathon into product-driven booth bonanza. (It is in LA, after all).

Call +1(617) 494 8202 for more info. ≡III We'll get back to you on that: Remember when our Veep challenged the cable-and-telecom world to wire together US schools? You probably rolled your eyes. You were right. In a survey ▶



Sherman and Mr. Peabody's wonderful cartoon time machine – which transports the boy and his dog to significant historical events and casts them in the starring roles – is no longer just a fantasy for people who'd like an insider's perspective into the intricacies of Washington. Sony Electronic Publishing is giving them the opportunity to sit at the desk of the White House chief of staff during one of the most fascinating periods in US history – the Nixon years.

The Haldeman Diaries: Inside the Nixon White House is a CD-ROM that contains a wealth of material cleverly presented in the form of the late H.R. Haldeman's desktop. (He died in November 1993.) You see his personal diary (all 2,200 pages), appointment book, video camera, files, and photo album.

The idea for the CD-ROM came from Haldeman himself, according to Jeffrey Fox at Sony. From Haldeman's first day in the White House, he began filming people and events with his own 8 mm camera (45 minutes from the 27 hours of footage Haldeman shot are included on the disc). He also took hundreds of photographs – and kept extensive records of his daily activities in a diary.

Additional material includes biographies of more than 100 major figures, 2,000 pages of documents from the period, and a 120-page letter that Haldeman wrote from prison to prosecuting attorney James Neal, professing his innocence in the Watergate break-in and coverup.

The hot buttons and hyperlinks in the text of the diary allow you to call up one of 700 corresponding photos, or a video clip, on a wide variety of subjects – ranging from the meetings with foreign dignitaries to never-before-seen footage of Nixon dancing (at daughter Tricia's wedding).

The US\$69.95 CD-ROM (available for DOS – the Mac version is coming later this year) was released to coincide with the publication of excerpts of Haldeman's diary by Putnam. Sony Electronic Publishing: +1 (212) 702 6273. – Mark Frauenfelder



Not very long ago, wild-eyed and fast-talking virtual reality evangelists daydreamed of the time in the near future when headmounts would become workaday tools. Few believed them.

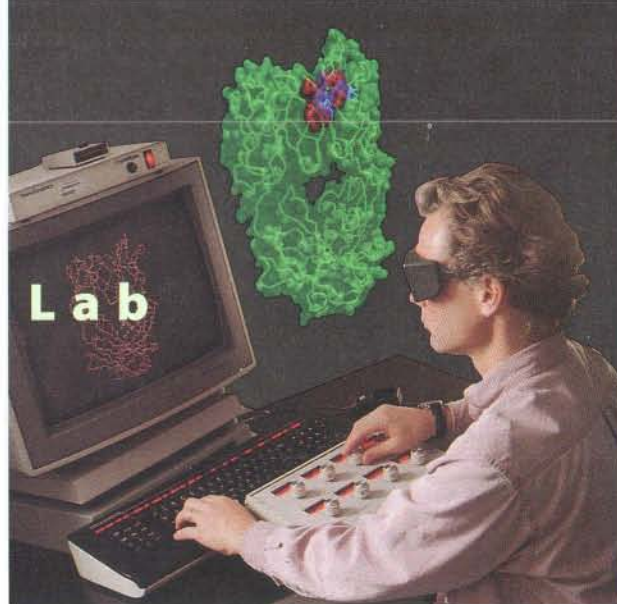
But now one can walk into the laboratories of any number of pharmaceutical companies and find darkrooms where some scientist spends his or her day wearing goggles, staring into a 3-D world and twiddling dials as a way to design new medicines. For instance, Charlie Eigenbrot

(shown here), a crystallographer at the bioengineering firm Genentech, uses a classic Evans & Sutherland graphics workstation and an off-the-shelf pair of Crystal Eyes goggles to determine the structure of an antibody. He compiles a sketchy outline of a molecule derived from x-ray crystallography and then uses visual inspection in 3-D to try to fit a virtual molecule of a different substance into this "cage." A molecule that fits could be a profitable antibody drug.

This kind of technology — manipulating the tinkertoy shape of virtual 3-D molecules — was used by Vertex Pharmaceuticals last year to develop a new class of compounds that

The Dry Lab

suppress the HIV virus, yet are small enough to pass through the human gut. More and more pharmaceutical research is begun when a scientist, wearing VR goggles, steps into a "dry lab" — before the research ever even heads into the wet lab. — Kevin Kelly



of twenty such companies, telecom regulator extraordinaire Rep. Ed Markey found just three that were willing to accept the challenge.

"Enlightened self-interest" as social policy: Feh. Speaking of Mr. Gore: No longer content with wiring the US, Al now has it in for the whole darn planet. Speaking to a UN conference in Buenos Aires earlier this year Gore envisioned a "planetary information network" that would create a "global information marketplace." Armageddon: If you're into walking the fine line between chaos and control, plan

on a trip to San Francisco to check out Survival Research Lab's latest techno-potlatch performance. On May 28 Mark Pauline and more than 100 volunteers will take about 80,000 square feet and fill it with menacing machines that only a lunatic could love. To get more info on this exploding mélange of steel, microchips, and military hardware (which is co-sponsored by *Wired*), call +1 (415) 241 1568. What Are You Driving?: A recent article in *Forbes* points out that there is US\$782 worth of microelectronics in the average car, but only \$675 worth of steel. April Fools: Those

France's Jerry Lewis Media Policy in Action

France has decided it needs multimedia — or *multimédia*, as the nation must now call it, the accent mandated by the government's desire to avoid the use of an English word when there is a French one. With much the same logic — or lack of it — used to defend the language against Anglo-Saxon innovation, Edouard Balladur's government has set about creating an all-French *multimédia* industry. The first step showed off some decidedly unattractive Gallic traits: cronyism and behind-the-scenes maneuvering for control of France's most successful "independent" television network, Canal+.

On February 14, André Rousselet, the station's president, resigned in a huff after its biggest shareholders — Générale des Eaux, a cable television and water company; Havas, a publishing group; and Société Générale, a bank — said they were combining their stakes into a common holding company, which would control almost half of the capital for Canal+.

Rousselet, who suspected (rightly) that this was a government-encouraged attempt to wrest control of the station from him, did not wait around for his suspicion to be proved correct. He wrote a long article in *Le Monde* accusing the government of unconscionable meddling and headed for the door.

French officials have long argued that if France is to keep abreast of developments in *multimédia*, it needs an advanced, nationwide, cable television network. But few are willing to pay for cable when they already subscribe to Canal+ and get top-notch movies and sports from the network's satellite. As a compromise, the government recently proposed that Canal+ contribute US\$76

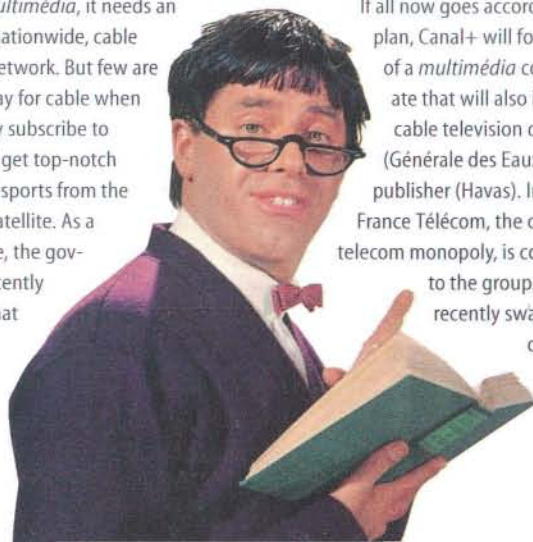
million to the cost of cable television — in return for the renewal of its license next year. This infuriated Rousselet, who called the sum "a ransom."

The network's refusal to pay, in turn, infuriated Générale des Eaux, which has lost a fortune on its cable television network. Egged on by the government, Générale des Eaux organized the coup that led to Rousselet's departure.

If all now goes according to plan, Canal+ will form the core of a *multimédia* conglomerate that will also include a cable television operator (Générale des Eaux) and a publisher (Havas). In addition, France Télécom, the country's telecom monopoly, is cozying up to the group. It has recently swapped part of its telephone director-

ry publishing operation for a 5 percent stake in Havas. With the obstructive Rousselet replaced by someone more willing to follow the nods, winks, and nudges by which much French industrial policy is made, the hope is that the group will become a *multimédia* world-beater.

In reality, the French face many obstacles in *multimédia* — the largest of them of their own making. The government's desire to create a specifically French *multimédia* firm limits France's ability to take advantage of technological advances made elsewhere. "To preserve French culture," the French government is also promoting quotas on imports of television shows, rock, and other pop culture. The opportunity to watch a souped-up video of Johnny Halliday, France's aging national rock star, on a souped-up version of Minitel, France's aging national computer network, does not sound like the sort of thing that will make *multimédia* a roaring succès. — Martin Giles



Silicon Surfer

I've surfed in Los Angeles and I've surfed in Indonesia, but I never thought I'd be surfing in the heart of the Canadian Rockies. Here at the Banff Centre for the Arts – an institution for advanced professional training in the arts – longtime surfer and videographic animation artist Michael Scroggins has developed *Topological Slide*, a VR surfboard that shoots through 3-D representations of mathematical equations instead of twenty-foot waves.

Scroggins invites me to step up onto the "surfboard" – a disk equipped with sensors that measure my body movement – and puts the display helmet on my head. In the refrigerated computer room next door, a Silicon Graphics Onyx computer cranks out a Jorge-Meeks Trinoid, which looks like a triple version of a pipeline. I'm surrounded by hundreds of polygons, each of which is a different color to aid in navigation. The wireframe landscape curves away into the 3-D distance.

Interactivity is the key to any reality, so I lean in the direction I want to go. I rush forward. The surface races under my board. I add a bit of sideways lean and arc off diagonally across the polygons. As I approach the inside edge of the structure it rotates up like a wave and I spin around in a barrel-roll maneuver and tumble right over – in *actual* reality. If Scroggins hadn't caught me, I would have landed flat on my real ass.

By turning abstract mathematical formulas into experienceable VR sculptures, complete with a cool transportation device, Scroggins not only explores new methods of scientific visualization but has a little fun on top of it. Michael Scroggins at California Institute of the Arts: +1 (805) 254 0591, aka@netcom.com. – John K. Bates

Pay-Per-Play

QVC and the Home Shopping Network probably thought they had the corner on the compulsives-with-credit-cards market, but two new television channels – Gaming Entertainment Television and The Game Show Channel – could have couch-potato shoppers extending their credit limits with somebody else. Considering Americans spent US\$340 billion last year gambling and a wimpy \$5 billion at the box office, potential viewership and income is enormous.

In June, Gaming Entertainment Television, based in Pittsburgh, plans to bring Atlantic City to the home, replete with horse racing, poker, and \$1 million jackpot bingo. The Game Show Channel, owned by Sony in partnership with Mark Goodson Productions and United Video, sports a softer, fuzzier feel: This is *The Price Is Right* and *Wheel of Fortune* with smaller jackpots and



better chances of winning. Both are banking on two assumptions: that this programming format will offer more profit than any other type of television programming, including network TV, and that lots of people are going to bet lots of money.

The Federal Communications Commission forbids broadcasting games of "chance." But find a way to turn gambling into a game of skill and you're in business. Simply put, a game of chance is one where a fee is charged to play, luck (instead of skill) determines the outcome, and a prize is given to the winner. Figure out a way to bypass just one of those three tests and you've got a legal game. That's what these stations have done, in two very different ways.

Gaming Entertainment TV's solution is to offer games the FCC considers skilled: horse racing, card playing, billiards, and yes, bingo. By offering bingo as part of its premium channel, your monthly subscription fee becomes the "bet." Since the monthly fee isn't directly tied into the game itself, there is technically no bet, and broadcasting bingo becomes legal under FCC codes.

The Game Show Channel plans to begin airing by the end of this year. It takes a different tack: Advertising alone must cover broadcasting costs. You won't pay to play along and win. Interactivity will be the lure that draws more viewers, so the prizes will be small and broadly distributed.

If these shows get as popular as their owners hope, expect Congress to step in and regulate these new industries. Until then, have couch, credit card, and remote handy!

— David Bennahum



T I R E D

stories
synchronous
ASCII
Dr. Martens
fast twitch
Hillary Rodham Clinton
info-highway
metaphor bashing
Clipper debate
Esquire
3DO

Kurt Cobain
bonds
Time Warner
QVC



W I R E D

experiences
asynchronous
HTML
Dr. Scholl's
network
Anne Bingaman
info highway

privacy debate
New York
Sony's 400 mips
game machine
Courtney Love
hedge funds
Internet on cable
CommerceNet

► nutty hackers over at MindVox played a joke on themselves for April Fools: When Vox's mostly New York-based users logged on

April 1, they were greeted with the welcome screen for Northern California's Well service. That's kind of like popping in the latest

Pearl Jam disc and getting the first few bars of the Grateful Dead's "Sugar Magnolia." ≡III Whatta Role Model: It had to happen.

Barbie is now a video game. From the press release: "Young girls can now interact with Barbie in her quest to become the hottest of

super models in Hollywood, New York, Aspen, and Hawaii. Challenges, surprises, and bonus rounds await Barbie, and young girls, in each location!" And in "Barbie Game Girl," Barbie "discovers mysterious and powerful charms and makes new friends – all while trying to find her way to the top of the 'mall maze' to meet Ken for a date under the moonlight!"

Wouldn't it be great if they made video games for girls that didn't suck? ≡III Standing up to Bill: Bill Gates wants China's

Digital Signatures

Privacy encryption, the kind found in such software as ViaCrypt/PGP, allows information to be completely hidden from anyone for whom it was not intended. Another popular form of digital cryptography is digital signature software. Rather than hiding your message, it attaches an encrypted "signature" to it, authenticating the electronic document.

Adopting a digital signature standard has been on the agenda of the US government since 1991. Both government and industry players agree that electronic commerce on the Net will not proceed apace until there's a reliable, and universal

means of authenticating documents.

What's the holdup? You'll be sorry you asked.

The question leads straight into a quagmire of bureaucratic red tape and intellectual property disputes. At its heart is a conflict between the government and Public Key Partners, the company that holds the licensing rights to all the critical patents for public key encryption. PKP wants to license these patents to the government in exchange for an exclusive worldwide license of the government's digital signature algorithm patent. That patent was built to further confuse things, as

an "improvement patent" on top of PKP's existing patents for public key encryption.

What we have here is a standoff. The government can't move forward with its encryption technology plans without PKP's patents, and PKP won't license them to the government unless the government hands over the patent and agrees to royalty payments.

Are you following this? After much negotiating, the government and PKP seemed to have finally agreed upon a proposal for a cross-licensing plan – that is, until February 4, when the White House an-

nounced that it would be moving ahead with a "royalty-free digital signature standard." What standard is that, and when might we expect it? Nobody knows. Anne Enright Shepherd, a spokesperson for the National Institute of Standards and Technology, would only say that "at this time there is no standard, and negotiations with PKP are ongoing." She did reiterate that administration has determined that such a technology should not be subject to royalty payments.

In the meantime, on March 21, RSA Data Security, a partner company of PKP, jerked the govern-

A New Sense Organ for the Net

Spacecraft such as the Hubble telescope and the Galileo space probe are remote-sensing antennae for the body of the Net. These digitally connected feelers transmit laser-guided streams of digital images, letting us see into the blackness surrounding us – through our desktop monitors.

Clementine I, a military space probe launched last January, is the latest addition to the Net's array of whiskers. It was built by the Pentagon's Ballistic Missile Defense Organiza-



tion (you probably remember it under its former title, the money-sucking SDI).

Just why is the Pentagon taking pictures of

outer space? Are Defense drones looking for little green men to fight now that the commies have called it quits? No, the Clementine project is a

mission to test tracking and targeting hardware using celestial bodies like asteroids, instead of more expensive manmade targets. But scientists are going to accumulate a wealth of astronomical data in the process of the military exercise.

Like the Ballistic Missile Defense Organization's revolutionary Delta Clipper ("Will the Delta Clipper Turn Deep Space Into Cyberspace," *Wired* 2.02, page 68), Clementine was built fast and cheap using the latest

technology. Launched just one day late, Clementine was developed on a remarkably short two-year schedule for US\$75 million.

Measuring six feet in length, the 1,000-pound Clementine is making a complete map of the moon (the first in twenty years), and will then loop around Earth and shoot out 5.3 million miles for a fly-by of the asteroid Geographos. You can get Clementine's pictures from clementine.s1.gov. – Caleb John Clark

Ministry of Electronics Industry to support Windows as a Chinese standard, but the Ministry has refused to do so. Indeed, the Ministry has discouraged software developers from using Windows. This has Bill hopping mad. "Microsoft Windows is known around the world," he huffed to the *NYT* after talks failed with Beijing. Hmmm, might that have something to do with it, Bill? ≡III Lighten Up, Carl: Remember when we reported on Carl Sagan's new nickname over at Apple Computer (for your edification, it was "butthead astronomer." Apple developers had code-named a secret new computer "Sagan," only to be threatened by Sagan's lawyers that the use of his name on a product, even in prototype

stage, was infringement). Well, ol' Carl's now suing Apple for libel, claiming that the "butthead astronomer" moniker is defamatory and subjects him to "hatred, contempt, ridicule, and obloquy." *The Wall Street Journal* pointed out that the outcome of the case will hinge on the definition of "butthead." Thanks for helping us understand, Carl. ≡III The Growing Old Market: On Prodigy and CompuServe alone, there are more than 200,000 subscribers over the age of 55, according to an article in the *St. Petersburg (Florida) Times*. ≡III More numbers: *NBC Nightly News* estimates there are at least 7.8 million telecommuters in the US alone. ≡III ▶

ment's chain by announcing that it was making its own digital signature software, called RIPEM/SIG (also based on PKP's patents), available free for noncommercial use and international export. Says Jim Bidzos, president of both PKP and RSA, "You want free signature software, you got it."

In the absence of government action, RSA-based signature (and encryption) software is becoming a de facto standard. Companies such as Apple and Lotus are licensing it for their commercial products. RIPEM/SIG is available by ftp at rsa.com. – Gareth Branwyn

Tiny Robots Make Light Work



A surprisingly simple technology being developed in Japan has micro-robotics scientists licking their lips in anticipation of a long-sought-after goal: Lilliputian-sized factories. Researchers from Nagoya University in Japan have built a system that controls and powers one-inch-square, wafer-thin robots with pulses of light.

Toshio Fukuda and Hidenori Ishihara, the designers of the system, had to overcome a number of specific problems. First, to counter friction, they

decided that their robots should float, so they built an air-hockey-type table to allow the robots to move about on a cushion of air.

The next difficulty was coming up with a way to control the movements of the robots without weighing them down. Using light beams seemed to be the ideal solution – they could reach the robot without mechanically interfering with it. So each robot now contains an element that becomes charged when exposed to ultraviolet light, thrusting the robot forward. When the light is

turned off, the robot continues to travel at a constant speed.

At the moment, the system is basic and limited to a single, unproductive robot moving in one dimension. Next up: expanding the controller to work with multiple robots in two dimensions. And Fukuda's group has developed a gripper that is light controlled. This research aims to eventually have a number of robots working cooperatively to build small systems, perhaps even other robots like themselves. More and more little robots would lead to bigger and bigger structures – with little or no human guidance. – Sunny Bains



P l u c k y Performance

The arm hanging from Ken Rinaldo's living-room ceiling looks like a 9-foot version of a heavy-duty crane's projecting arm, but it's constructed from dried grapevines, not steel. At the arm's shoulder, a nervous system of colored wires emerges from a tightly packed assortment of little circuit boards. The wires branch out to microphones, speakers, and infrared sensors mounted along the length of the arm. Rinaldo's partner, Mark Grossman, toggles a switch and the three-jointed arm twitches to life and begins to sway, very slightly.

I start to ask a question – the arm, hearing my voice, perks up

and, driven by cables attached to a motor, cautiously bends toward me as though sniffing like a stray dog. When I back away, the arm follows, hovering close, but never quite touching me. Rinaldo explains that the arm's behavior program is structured like an onion. "The core layers of the program deal with the most important aspects of behavior, such as self-preservation. The idea is you add layers of more advanced behavior on top of the core behavior. If a lower level is safe it can go to the next level of behavior."

The arm is one of a group of three, collectively called "The

Flock." Designed and built by Rinaldo, a former ballet dancer and computer systems consultant, and Grossman, a co-founder and principal engineer of Silicon Graphics Inc., "The Flock" was developed to explore the way technology's course of development repeats the evolutionary history of DNA-based life forms.

Besides approaching the source of a sound, the arm also exhibits repulsion behavior: By sending out a pulse-modulated beam of infrared light, it can measure the distance to an object and will avoid striking it. If the arm moves in the direction of a sound and doesn't sense anything in its way,

it will "sing" out its position to the other arms using audible telephone tones, and they will "flock" to that location.

What are the consequences of modeling technology after biology? Rinaldo believes that the two are rapidly fusing together, "resulting in visualization of the earth as a total interdependent living system, an emergent form of human consciousness through digital transmissions, perception extension through microscopic-teleoptic technology, computer-mediated amplification and an overall collapse of space time." Ken Rinaldo: +1 (415) 566 5133. – Mark Frauenfelder

Reality Check You've heard the Hype. We asked the Experts. Here's the *real* Timetable.

	Completion of Human Genome Project	AIDS Vaccine	Universal Organ Donor Animal	Gene Therapy to Cure Cancer	Human Cloning
Boguski	—	—	Never	Never	—
Lee	2005	2000	1999	1999	2004
Robbins-Roth	2001	2004	2000	2000	Never
Sutherland	2000	Pessimistic	2020	—	Now?

In the mid-1800s, Austrian monk Gregor Mendel spent much of his time crawling around in the dirt of his monastery garden examining his pea plants, and eventually discovered heredity. More than a century later, a multibillion dollar industry continues Mendel's work on a deeper level, with the elimination of human suffering as its goal (as well as making money). In biotechnology labs, researchers work to unravel the mysteries of heredity. *Wired* asked four experts in the field to predict when certain biotech milestones may be achieved. Their responses suggest ethical concerns as much as they identify technical boundaries. — David Pescovitz

Completion of the Human Genome Project

Boguski thinks completion is far off unless we discover cheaper and faster methods to sequence the three billion base pairs of the human genome. Robbins-Roth looks forward to "the real point of all this": figuring out "the biological function of the encoded proteins."

AIDS Vaccine

According to the World Health Organization, an estimated 14 million people worldwide are infected with the HIV virus. And that number is not getting any smaller. According to Sutherland, the major obstacle to a cure is that the virus that causes AIDS is comparable "to a chameleon." Robbins-Roth agrees that the virus mutates so often it's able to "hide from both vaccines and from drugs aimed at critical components." Lee, however, is optimistic that "a successful vaccine will be developed with attenuated viruses engineered by selectively inactivating viral genes responsible for the disease."

Universal Organ Donor Animal

Genetically engineered animals, probably pigs, whose organs may be transplanted into humans without rejection may solve the massive organ-donor shortage. Sutherland thinks we will have pigs with some human antigens in ten years, although "there will still be incompatibilities." But Boguski thinks that "apart from political action by animal rights organizations...universal donor animals will always be a very expensive therapy of benefit to a relatively small number of people."

Gene Therapy to Cure Cancer

Cancer caused more than 500,000 deaths in the United States alone last year, according to the National Cancer Institute. Sutherland predicts that it might be stopped only by combining gene and other therapies, like immunotherapy. Lee foresees "sophisticated approaches to deliver functional copies of tumor suppressor genes" following currently

planned trials using immune modulators, including certain hormones, to "activate the immune response to tumors."

Human Cloning

Although many researchers think this is technically feasible, it's unlikely that you will soon run into the twin you never knew you had, if the ethics of the majority of scientists prevail. "Here is where we need the Luddites," Sutherland says.

Reality Checkers

Dr. Mark Boguski, MD, PhD, National Center for Biotechnology Information, National Library of Medicine, National Institutes of Health. (His views are his opinions — not official statements by the US government or any of its agencies.) Frank Lee, PhD, molecular biologist; Cynthia Robbins-Roth, PhD, editor-in-chief of BioVenture Publishing Inc.; Dr. David E.R. Sutherland MD, PhD, professor of surgery and director of the Pancreas Transplant Program at the University of Minnesota.

▶ At It Again: Noted system-jammer John Gilmore has filed another Freedom Of Information Act (FOIA) claim, this one aimed squarely at the foibles of the government's Clipper Chip encryption standard. Gilmore has requested the database of encryption keys from the Treasury Department and the National Institute of Standards and Technology, the two Clipper escrow agents. Of course, the request is absurd on its face (why would the government voluntarily give up information that would effectively invalidate Clipper-encrypted communications?), but as with most things Gilmore, there's a deeper logic. He explains on the Cypherpunk mailing list: "There appears to be no FOIA exemption that would justify withholding the key escrow databases which ▶

J A R G O N W A T C H

Byte-Bonding — When computer users get together and discuss things that noncomputer users don't understand. When the byte-bonded start playing on a computer during a noncomputer-related social event, they are "geeking out."

Chips and Salsa — Chips = computer hardware, salsa = software. "Well first, we gotta

figure out if the problem's in your chips or your salsa."

Fine Business — Amateur radio slang used to fill dead air space when you need to say something but can't think of anything. Like "um" or "ah" in normal conversation.

Glass-roots Campaign — Cyber grass-roots campaign assisted by fiber optics and computer networking. The

online campaign by EFF and CPSR against the Clipper Chip is a prime example.

Height Technology — Silly engineers' term for "ladder."

Idea Hamster — Someone who always seems to have his or her idea generator running. "That guy's a real idea hamster. Give him a raw concept and he'll turn it over 'til he comes up with something useful."

LRF Support — An official-sounding computer feature that can be used to prank a salesperson or a computer know-it-all. "Does this system come with LRF support?" (LRF stands for Little Rubber Feet.)

Ohnosecond — That minuscule fraction of time in which you realize that you've just made a BIG mistake, such as

accidentally deleting your e-mail address book in a non-recoverable way. Seen in Elizabeth P. Crowe's book *The Electronic Traveler*. — Gareth Branwyn

Thanks and a tip o' the Wired hat to: Alan Turner, Michael Newman, Gary Coffman, Bruce Sterling, Tom Igoe, John Pettitt, Brian Quennell, and FionaM945.

B LEGAL A Sample Violation



Last November, the New York daily *Newsday* ran a front-page story on virtual reality. It turns out the *real* story was not the content of the article but the cover picture — a man and woman with TV-set heads charging madly about the landscape. Stock photo company FPG International claims *Newsday* created that picture by scanning one of FPG photographer James Porto's copyrighted images and combining it with other images. In February the company took *Newsday*, its publisher, and two members of its art department to court in Manhattan with a copyright infringement lawsuit for US\$1.4 million.

From the photos shown here, it looks like FPG won't have a hard time proving *Newsday* lifted the figures of the man and woman straight out of Porto's image. As she embarked on the legal process, FPG president Barbara Roberts held that "there is a misbelief among the new 'desktop'

designers that the law has yet to catch up to the new-age technology of digital imaging. In fact, the existing copyright laws are more than adequate." Recent case law suggests she's right. Rapper Biz Markie was found to have infringed the copyright of a song when he sampled it on one of his album tracks, and, in another case, a BBS infringed when it distributed digitized images from the pages of *Playboy*.

Still, *Newsday* did not simply copy the FPG image but rather cut out pieces of it and combined them in new ways. On the *Newsday* cover, the figures are turned around, the money they were holding in their hands erased, and the clock faces on their necks replaced with TV sets. The bodies of the figures are the same, but the look and meaning of the pictures are entirely different.

Ironically, FPG's "source" images themselves are composite images,

strikingly so in the case of the people with the clock-face heads. Did the photographers create all the components of these images themselves, and if not, did they clear the rights with their owners?

We also have to wonder whether *Newsday* and its staffers have become just a bit woozy in the rarefied air of the digital era (*Newsday* has refused to comment on the case). The *Newsday* artist who lifted the image is, according to FPG, the same one who created the famous fake picture of Tonya Harding and Nancy Kerrigan skating closely together during the Winter Olympics.

Ultimately, the case against *Newsday* is really about whether there is a right way and a wrong way to use the images of others, a question many artists have refused to recognize — from Jeff Koons (who's been found by two courts to be a rip-off artist) on down. — Lance Rose

LEGAL BEAT: JAMES PORTO/FPG

► Treasury and NIST are building. (The keys are not tied to any individual, so individual privacy isn't a valid exemption. The database isn't classified.)" Here's the wonderful rub: If the escrow agents deny his request, claiming the contents are classified, then police agents have no right to see them either. ≡III They Can Dish It Out.... Following Kuwait, China, and Saudi Arabia's lead, Iran has

banned all satellite dishes. Next stop, France. ≡III What're They Smoking Over There?: The usually staid business pages of *The New York Times* are starting to spunk up, particularly when it comes to articles covering the infosuperhype. An story detailing a failed alliance between AT&T and Microsoft, brokered in part by Craig McCaw of McCaw Cellular, was headlined "Microsoft and AT&T Confess to a 3-Month Fling." The entendre-laden subhead: "Craig McCaw plays matchmaker. Or does he want a threesome?" ≡III

W I R E D T O P 1 O High-tech and Electronic 'Zines

1. 3W: Global Networking

British 'zine that maps the far reaches of the Internet. Invaluable tips and access info. Written for the average net dweller. 3W@ukartnet.demon.co.uk

2. 2600: The Hacker Quarterly

Tech mag for hackers, phreakers, and computer security professionals. emmanuel@well.sf.ca.us

3. Intertek

Journal examining the many points where technology and society cross paths. tek@well.sf.ca.us

4. Historically Brewed:

Publication of the Historical Computer Society

For people who pine for the early days of microcomputers. Commodore VIC-20, anyone? David Greelish, 10928 Ted Williams Place, El Paso, TX 79934

5. Fringe Ware Review

A magazine and catalog of nonmainstream ideas and home-brewed technology. fringe@well.sf.ca.us

6. Iron Feather Journal

Colorado-based 'zine of hacking, anarchy, and mischief. PO Box 1905, Boulder, CO 80306

7. Extropy

Futurist visions centered around life extension, AI, cryonics, nanotechnology, and posthuman cyborgs. 11860 Magnolia Ave. Suite R, Riverside, CA 92503

8. Groom Lake Desert Rat

Online 'zine of UFOs, dark conspiracy, and things that go bump in the night. psychosp@att.com

9. Cybertek:

The Cyberpunk Technical Journal

Legal and illegal hacks, tech tricks, and things you probably shouldn't know about. PO Box 64, Brewster, NY 10509

10. LineNoiz

Electronic publication with an attitude and a nose for college hacks, pranks, and weird news from the net. dodger@fubar.bk.psu.edu with "subscription linenoz <your address>" in body of message

Chosen by the editors of *Factsheet Five* and *Factsheet Five Electric*. jerod23@well.sf.ca.us.

"They Can Network Me.

Make Me Interactive.

Even put Me

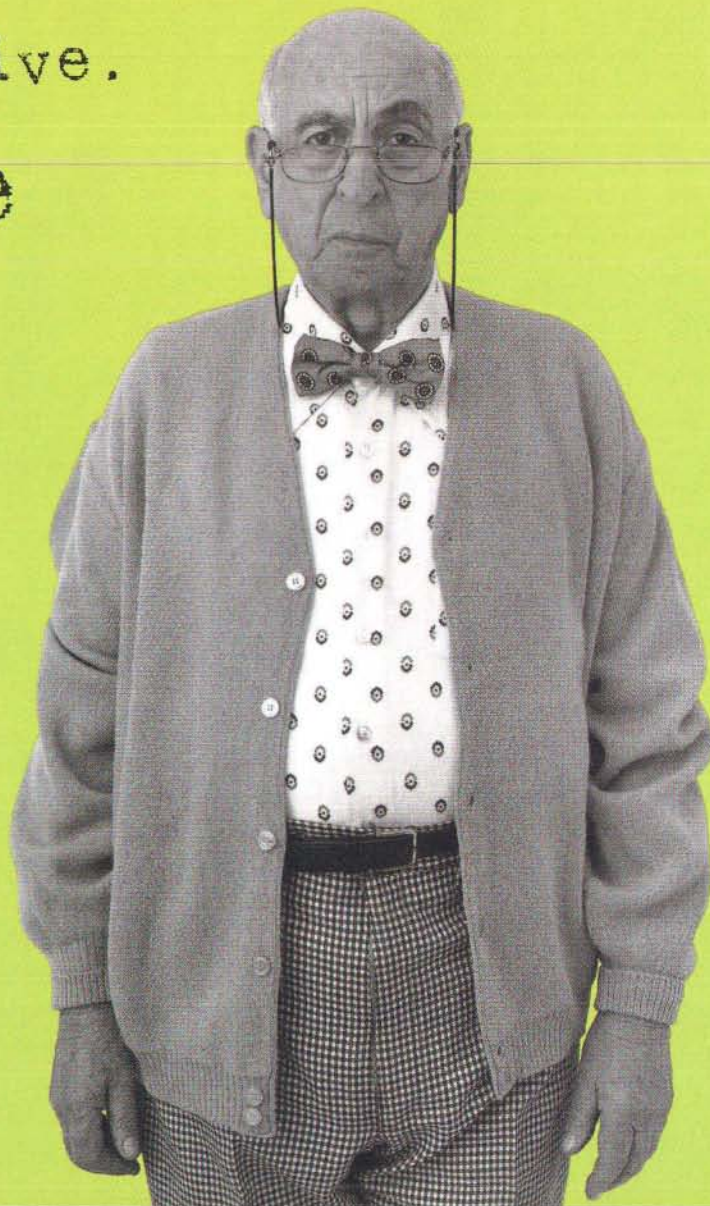
On Some Digital

Expressway. Can't

Someone just

Cure My

Scanaphobia?"



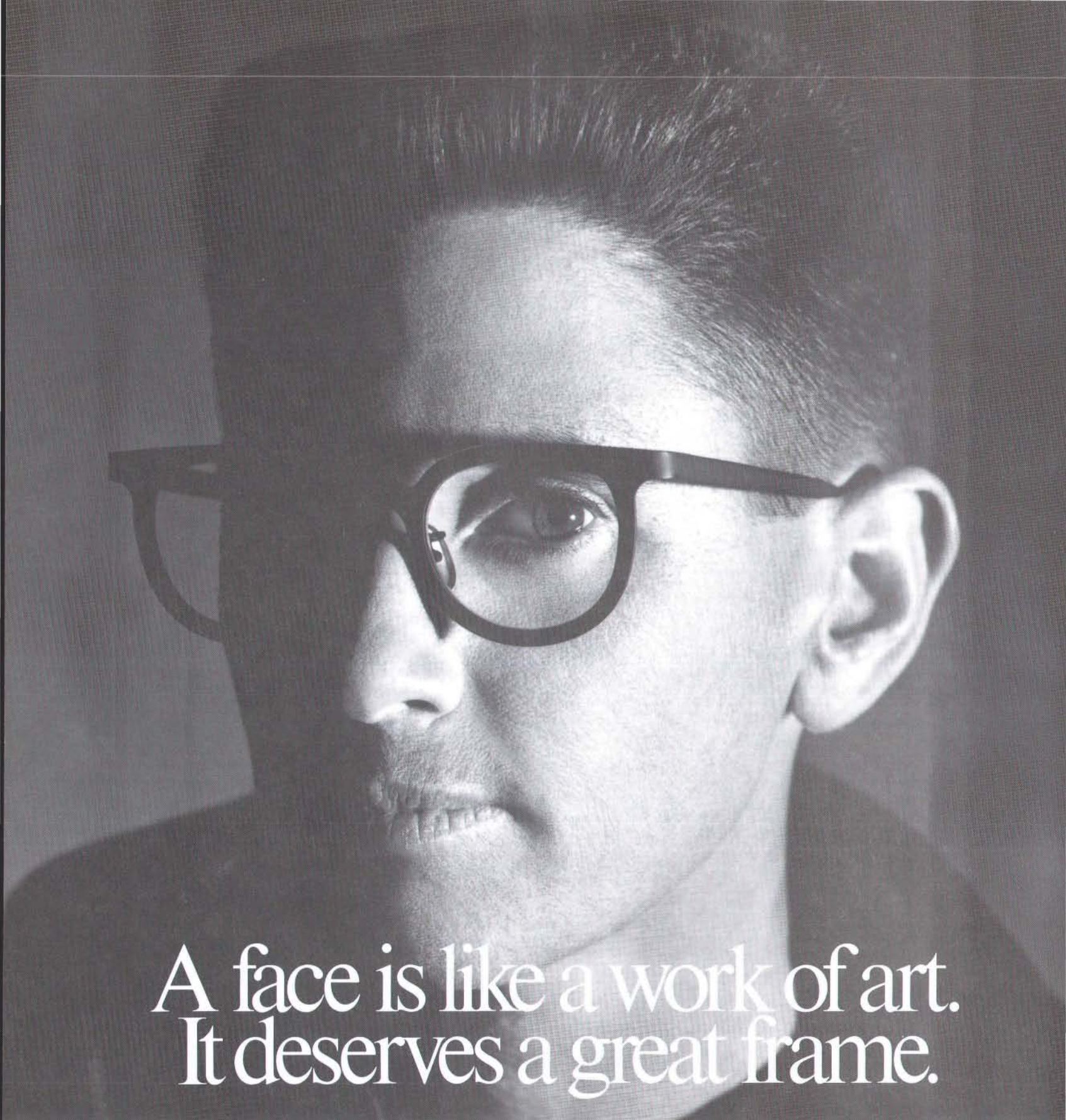
Autoscan



The IX-4015 Color Scanner
for the PC or Mac®

Yes. Introducing the Canon® IX-4015 Color Scanner. Its remarkable Autoscan feature produces professional quality scans in just one step. And with its easy to use OFOTO® version 2 software, small footprint, and affordable price, you'll find this powerful business tool a pleasure—not a pain. Now, we could load you up with all the great technical details, but that might scare you away. Instead, just see the IX-4015 at your local Canon dealer, or give us a call at 1-800-848-4123. Unless of course, you have "telephobia."

Canon



A face is like a work of art.
It deserves a great frame.

Designers of limited edition frames for sunglasses and prescription eyewear

***l.a.* Eyeworks®**

Face: Phranc. Frame: Frank by l.a.Eyeworks. Hair and Make-Up: Chris McMillan. Photographer: Greg Gorman. ©l.a.Eyeworks, 1994.

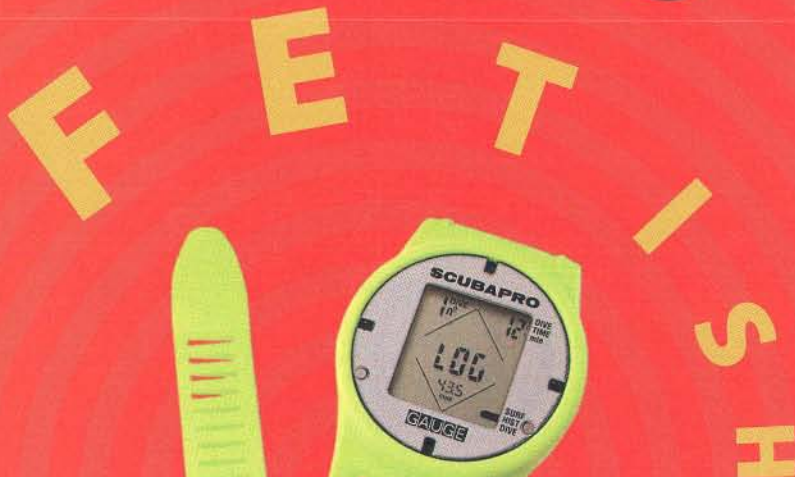
Available at: Eye Deals, Minneapolis, Eye Gotcha, San Francisco, Frederic Ian, Boulder, H.L. Purdy, New York City, Image Optical, Nashville, Joy of Spex, Chicago, Morgenthal-Frederics Opticians, New York City, Optical Phases, Davis, Soto's Optical Boutique, Sarasota. l.a.Eyeworks, Los Angeles and South Coast Plaza, Costa Mesa.

Beyond Mirror Shades ▶

Revo sunglasses use lenses originally developed for the space program. Their unprecedented clarity and outrageous metallic colors are the reasons I own four pairs. I never thought I needed a fifth ... until now. The US\$195 Revo Wraps hug the face to reduce wind resistance, and the full-peripheral lenses protect the eyes without interfering with vision. When my outings involve high-speed bike rides, ski runs, or pickup basketball games, Revo Wraps are my shades of choice. (800) 367-7386, +1 (415) 962 0906.

The Sun Also Travels

Computer users with a fetish for power need workstation-level speed wherever they go. Sun Microsystems's 15-pound Voyager is the first fully transportable SPARC workstation. With a 60-MHz micro-SPARC II processor, you'd expect it to suck a lot of watts. Wrong! The US\$14,995 Voyager is EPA Energy Star certified and has power management capabilities that extend battery and system life. And it's quiet – the power supply is cool enough not to need a fan. There's even an infrared interface for integrating personal digital assistants with the system. (800) 821 4643, +1 (415) 960 1300.



Edited by David Jacobs



Quick Takes

Tired of trips to the one-hour photo shack? Then go digital, with the Apple QuickTake 100. This US\$700 camera uses no film, has an automatic flash, and lets you shoot 24-bit high-resolution color images. Weighing in at under a pound, the QuickTake 100 is as easy to tote around as a standard camera. When you're back from your field trip, just hook the supplied cable to your serial port, load the QuickTake software, and download the images to your Mac. This may be the easiest way to bring the world you see into the computer you use. (800) 776 2333, +1 (408) 996 1010.

Digital Deep

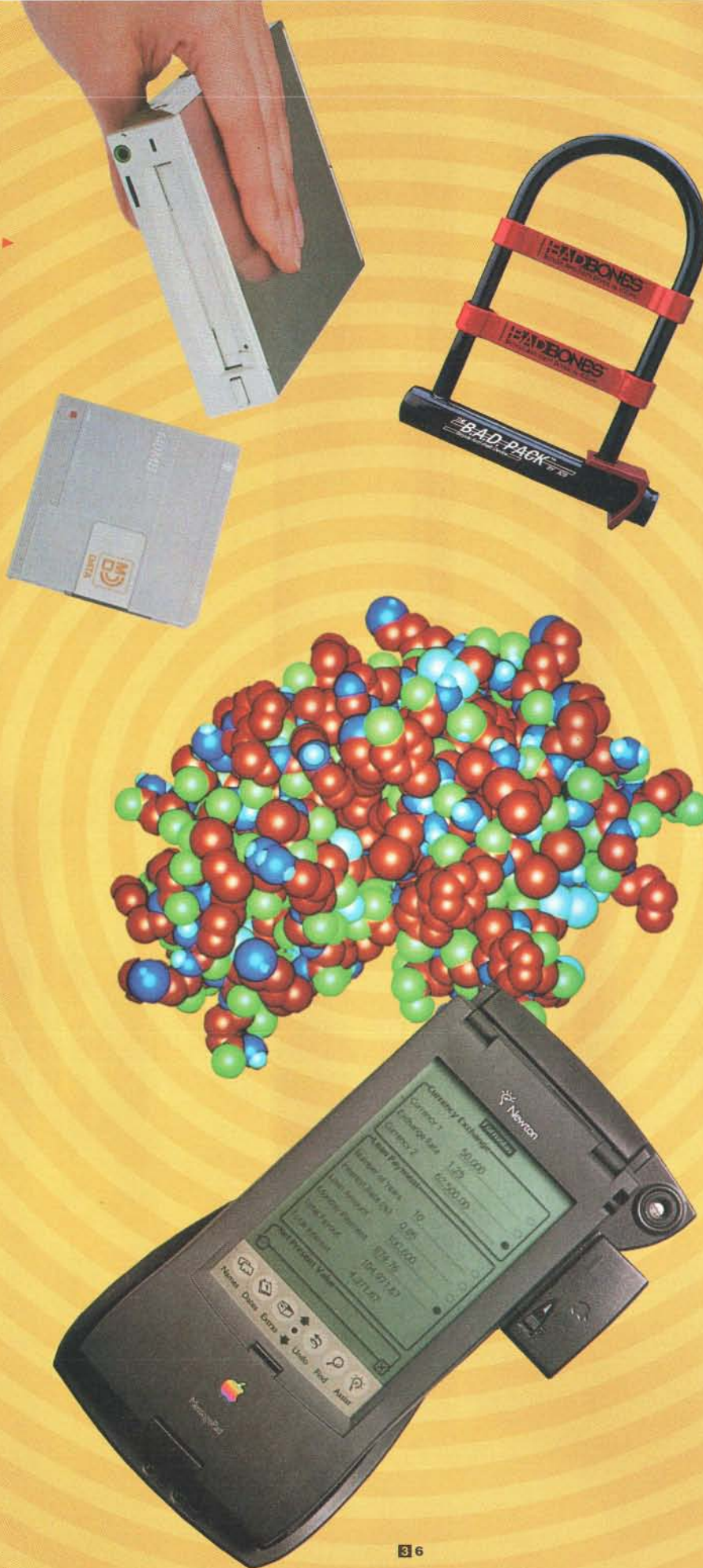
A case of the bends can ruin your whole day. That's why wired divers take the US\$168 Scubapro SG-12 depth gauge with them when they embark on a voyage to the bottom of the sea. Worn on the wrist, the brightly colored unit features a luminescent LCD display that not only provides a precision depth reading but also keeps track of current depth, maximum depth, and time spent under water. A special feature that logs accumulated total dive hours is useful for determining when to get your regulator serviced. (800) 467 2822, +1 (310) 639 7850.

When Less is More

Need to stash a gigabyte of data in your jacket pocket? For low-cost, compact data storage, you can't beat this new format from Sony. The MD DATA drive holds 140 MBytes of rewritable data on a US\$20 2.5-inch MiniDisc. The drive is available in both external and internal SCSI-controlled configurations. Each unit comes with a pair of headphones, so when you're finished crunching bytes, pop in a music MiniDisc and kick back. US\$400-\$700 (exact pricing to be announced). (800) 222 7669, +1 (201) 368 9272.

Use ONLY for Research Purposes

Sigma Chemical Co. is the place to shop for all your venom, scent, and mind-altering-drug needs. Cop a gram of 9, 10,-didehydro-6methyl-ergoline-8beta-carboxylic acid (aka LSD) for US\$194.65. (Note: You'll need to file some paperwork to get your order approved; call for details.) Need to train dogs to find people in collapsed buildings? Try Sigma Pseudo Distressed Body Scent, created to smell like a person who's in a state of panic. They've even manufactured scent to replicate the smell of a decaying human body. (800) 325 3010, +1 (314) 771 5765.



Bike Thieves: May They All Starve

Integrated Cycle Systems' B.A.D. Pack Attack integrates a standard U-lock with a pair of patented B.A.D. Bones, which are two steel strips that grip the U-lock on both sides and run across the center, and a collar that blocks a thief's ability to place a tool over the key mechanism. This extra reinforcement makes a jack, pipe, or two-by-four useless for your would-be thief. For US\$35 this is low-tech insurance for your high-tech bike. (800) 597 2663, +1 (415) 543 4466.

Replace Your Antique PDA

Even though I knew that the original Newton MessagePad was an "almost, but not quite" product, that didn't stop me from running right out and buying it. Six months later, I want the new one. On the hardware side, the US\$599 MessagePad 110 is a little narrower than the original, sports a protective cover, supports three times the memory for data storage, and has a much longer battery life. On the software side, the MessagePad 110 includes a feature to defer handwriting recognition until later and uses character-based, instead of word-based, recognition. (800) 776 2333, +1 (408) 996 1010.

"I gave the card to 50 employees. And each one has a different card."

© 1994 AT&T



The calling needs of the people who work here are as unique as the artworks we sell. That's

why we use the AT&T Corporate Calling Card. It lets me design an individual calling card program for each employee.



That means the person who deals with artists on the

West Coast has calling privileges from there, while the one who covers New England might be limited to calls from those states only.



This ability to set specific calling limits for each person is important. Because while I deal in art, I also run a business. And I've got to keep it in the black.



Another way AT&T lets us be creative is with our billing arrangements. They'll set up our bills any way we like. Which makes it easier to keep an eye on costs.



And AT&T eliminates one cost entirely—the cost of calling card fraud. They run an amazingly tight security program that keeps watch over our cards 24 hours a day, 7 days a week. Unusual calling patterns are a red flag. And if those calls are fraudulent, AT&T guarantees we won't have to pay.*



Listen, I may not know much about calling cards, but I know what I like. The flexibility and personalized service I get with AT&T. To get the AT&T Corporate Calling Card, call 1 800 892-3114, ext. 803.

The AT&T Business Advantage



1 800 892-3114, ext. 803

* Guarantee applies only to standard AT&T Corporate Calling Cards and excludes other service and billing options such as VTNS and bulk issuance. Excludes fraudulent usage by associated persons and liability based on knowledge of fraudulent conduct. Other terms and conditions apply.

Bristly Buzz ▶

The Sonicare toothbrush buzzes at 31,000 strokes per minute – over 150 times faster than you or I can brush on our best day. Besides being the fastest toothbrush on the block, what makes the US\$149.95 Sonicare so cool is that it works beyond the bristles, emitting high-frequency sonic waves that oscillate, creating tiny air pockets that penetrate the gaps and hard-to-reach areas of your teeth to break away plaque. (800) 682 7664, +1 (206) 957 0970.

Desktop Performance

Factory-standard computer speakers suck. The Bose Acoustimass-3 is a three-piece speaker set designed specifically to deliver the most from any desktop multimedia experience. Just connect the cable from the sound output jack ▶ on your computer to the three-amplifier base module, which you can stash under the desk. Two magnetically shielded 3-inch cube speakers sit atop little stands on your desk. The US\$699 system is a must for anyone requiring high-fidelity audio, like sound designers and MIDI composers. But this is also highly recommended even if you just like to rock out while working at your computer. (800) 444 2673, +1 (508) 879 7330.



Search No More

▶ Owning every phone book in the US could be a real nightmare. I used to have a complete set for Northern California, but I couldn't walk through my office. Now, one of the best CD-ROM values on the market – SelectPhone – provides you with a nearly complete set of phone directories for the US. ProPhone gives you four CD-ROMs with more than 90 million names, addresses, and phone numbers for both residences and businesses. The information is culled from printed books, so no unlisted numbers appear. You can enter a phone number, and the program will cough up the corresponding name and address. Pretty scary. US\$299. +1 (617) 631 9200.

Put Yourself on the Map

How would you like to know instantly the best way to get across town in an unfamiliar city? Sony's on-board car Mobile Navigation System uses Global Positioning System satellites to pinpoint your location. A 5-inch LCD display updates your position on a CD-ROM-based map. You ▶ can identify highways, state and local roads, hotels, local eateries, and airports. The NVX-F15 will sell for about US\$2,200. (800) 222 7669, +1 (201) 368 9272.

Create a file,
add sound,
personalized
messages,
and recorded
on-screen
activity, and
what have
you
got?

Warwick
YOUR FILE
THE MOVIE

LOTUS® SCREENCAM™

A SCREEN AND SOUND
CAPTURE UTILITY THAT
LETS YOU COMBINE MOUSE
MOVEMENTS, TYPING—
WHATEVER—AND YOUR
RECORDED VOICE TO MAKE A LITTLE
"MOVIE": A SCREENCAM FILE THAT
YOU CAN EMBED IN A DOCUMENT OR
SEND OFF TO COLLEAGUES.



*It's new. It's here.
It's \$79.*

USE IT TO CREATE A CUSTOMIZED
DEMO. ATTACH YOUR THOUGHTS TO
A DOCUMENT OR SPREADSHEET, OR
SIMPLY SEND A MORE EFFECTIVE
MESSAGE. AND LOTUS NOTES® AND

*Click on the ScreenCam icon—
the combination of screen activity
and recorded voice shows 'em and
tells 'em at the same time.*



**Embed a ScreenCam movie in any document
anywhere and send it to anyone.**

CC:MAIL™ USERS CAN DISTRIBUTE
AND STORE SCREENCAM FILES FOR
WORKGROUP COLLABORATION.

SCREENCAM IS EASY TO USE—IT'S
SET UP JUST LIKE A TAPE RECORDER
WITH SIMPLE RECORD AND PLAY BUTTONS.
UNLIKE OTHER MULTIMEDIA TOOLS, IT



DOESN'T REQUIRE
EXTENSIVE HARD-
WARE—JUST A 486
MACHINE RUNNING

WINDOWS™ 3.1 AND, IF DESIRED, AN
INEXPENSIVE DEVICE TO ADD SOUND
CAPABILITIES TO YOUR P.C. AND ANY-
ONE WITH A 386 MACHINE OR BETTER
CAN PLAY BACK SCREENCAM FILES—
WHETHER OR NOT THEY OWN SCREENCAM.

BUYING SCREENCAM IS NO BIG
PRODUCTION EITHER—IT'S JUST \$79.
SIMPLY GO TO YOUR LOTUS RESELLER
OR CALL LOTUS AT 1-800-
872-3387, EXT. 9620*

Lotus
Working Together™

alt.sex.bondage

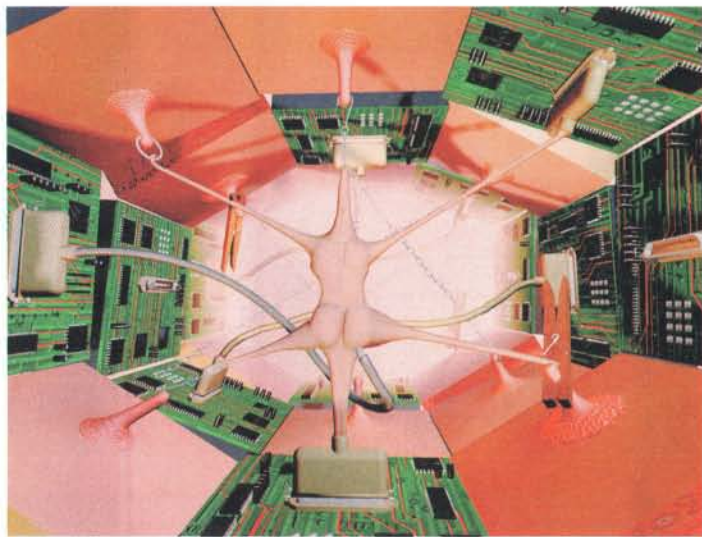
**You've heard about it.
We visit it.
A Novice's Guide.**



By Richard Kadrey

In cyberspace, the lunatics not only run the asylum, but they helped build it, which may explain why no one has been able to shut down or control it. Still, that hasn't stopped the bluesuits from wanting to gentrify the place.

For proponents of Net content control, no more tantalizing a target exists than the Usenet "alternative" newsgroup known as alt.sex.bondage. Since its birth in 1991, asb (as its users refer to it) has been home to some of the most thoughtful, provocative, and extreme postings on the Net. It



Despite its name, alt.sex.bondage isn't just for people into human macramé; it has become a kind of general hangout for all sorts of sexual adventurers.

has also become the ultimate online bogeyman: It looks butch in its leather drag, but it's hardly the threat to Western security interests that some in power would have you think. Despite its name, asb isn't just for people into human macramé; it has become a kind of general hangout for all sorts of

sexual adventurers, who have Net addresses that include many corporate and government offices – including Microsoft and NASA – and, not surprisingly, plenty of universities.

Why is asb so popular? A couple of reasons. One is the breadth of its topics. Of the several dozen alt.sex newsgroups, the only one larger is the more general alt.sex, which feels like – and functions as – a sort of stepping-stone to more specific (and adventurous) regions of sexspace. Asb, on the other hand, has become one-stop shopping for both dominants and submissives, as well as general-interest perverts. The discussion topics range from broad questions such as "How do I get started in S&M/bondage?" to the more specific "How long can I safely leave clothespins on a friend's nipples?"

On any day in asb there will be around 30 new topics and responses. During one 24-hour period in early February, readers posted questions about a rumored *Donahue* show on "Private Parts Punishment," about the cast list for a movie based on an Anne Rice novel, and – from Austria

– about the design of a "Leatherpride" symbol. A self-confessed "clueless" university student wanted more specific and basic information: "What is it that you enjoy about dominance and submission? How do you feel before/ during/after a scene, and what is it that causes such an intense release? How did you get involved in B&D/S&M in the first place? Was it a gradual introduction, or a sudden submergence?"

One new post contained a woman's reminiscence about the first time she was flogged by a man: "You gave me the sweet gift of wanting me and making me feel comfortable. The actual zero to sixty was, as I recall, just a few days over a week? And the wonder is, I thought if I ever did such a thing I would feel ambivalent afterwards. But all I really feel is blessed. Thank you." Others were requests for songs about dominance and submission, a eulogy for a dead friend, and an announcement for a new S/M 'zine. Such a broad range of postings has shaped asb into a kind of sexual town square with a real-time message board full of constantly shifting information and ideas.

Another probable reason for asb's popularity is that HIV has forced more heterosexuals to look for alternative methods of sexual expression. S/M and bondage are intense sexual playgrounds where traditional notions such as "Sex is intercourse" can be dropped, and sex play can consist of activities with low risk of exchanging body fluids. For the geographically isolated or the novice sexual explorer, asb can be a haven – a risk-free data zone where the curious can exchange questions and answers and play out their fantasies in relative safety. And though the Net is still almost entirely composed of rows of words on a screen, for the creative user, asb can also safely feed other hungers of the fetish world – voyeurism and exhibitionism.

Despite the Net's specific sites for posting fiction (alt.sex.stories, for instance), the users of asb happily continue to break the rules and post their stories where they want them to be seen. And the stories are as diverse as the asb users. Some stories have mutated into multipart sagas in which authors seem to be trying to work their way through the Big Book of Taboos, breaking each one as it comes into view. Some stories are the opposite – minimalist takes on single moments. One complete story reads:

Laying (sic) face down across my bed, wearing only his black t shirt, goth-boy was beginning to twitch and squirm. The crop fell lightly at first, eliciting a blushing glow on his back, legs, and ass. As the whipping increased in intensity,

Digital Weapons for a Digital World



OZ-8600
\$375.00 (Doc#180)



OZ-9520
\$549.99 (Doc#170)



NEW! from ISOTA
Deluxe leather carrying case
(available for 9600 and 9500
series Wizards) List Price \$69.99
Special Introductory Price!
\$59.99 (Doc#304)



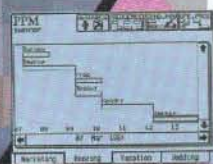
NEW!
Time and Expense Card 9000
List Price \$199.99
Special Introductory Price!
\$149.99 (Doc#205)



OZ-9600 II
\$469.99 (Doc#196)



SPECIAL OFFER!
Save 50-75% off selected
Sharp I.C. Cards
(Doc#207)



NEW! Project Management Card
(for 9600 series Wizard Organizers)
\$199.99 (Doc#206)

NEW!
Ruplynx™ for Wizard 2.0
Wizard to PC Data Transfer
(for 8600 and 9000 series
Wizard Organizers)
\$99.99 with cable
\$39.99 software only
(Doc#502)



NEW!
WinLynx™ 3.0 for Windows
PC to PC File Transfer
List Price \$169.95 (Doc#505)



NEW!
HireRight™ for Windows and DOS
List Price \$149.99
Special Introductory Price!
\$95.99 (Doc#504)

CATALOG
Call for a FREE copy of our
latest catalog featuring the
full line of Wizard products
(Doc#403)

INTERNET: sglasgow @rupp.com
AOL: RuppTech
COMPUERVE: 75300,1232
FORUM: GO RUPP

1-800-844-7775

7am - 7pm (MST) Monday - Sunday
New Fax Back Service For Detailed Product Information
1-602-224-0374



**RUPP
TECHNOLOGY
CORPORATION**

3228 E. Indian School Rd.
Phoenix, AZ 85018

his seductive looks into my eyes changed into the look of headspace. Moans escaped his beautiful pursed lips as the crop made angry red marks all across his backside. After three hard cracks to the same spot, he rolled around and begged, "Please! please, no more."

His face filled with the exquisite look of terror as my eyes went slowly from the crop to his now-exposed balls and back to the crop.

While many people might view playing with text as a distant kind of sexual act, asb users have eroticized the basic function of Usenet as an information exchange medium. Exhibitionists post their work for others to read, and the voyeurs read and comment on it, each group egging the other on, tweaking and making suggestions on how to refine the work and take it farther.

One writer who took his work very far is the author of the "Diane" series, one long story, posted in seven parts. Even many asb regulars,

about coercion and therefore strikes a nerve with asb readers, which is probably part of the point.

While the overall tone of asb is friendly and open, not everyone who visits there feels safe. Women, especially, who have posted openly about their sexual lives have reported being inundated with e-mail from guys offering to "do" them. One discouraged female user wrote, "Most of the truly crude, clueless, and obscene mail that I have received has been in response to posts in this newsgroup.... Unless a woman has a strong stomach, she won't post here more than once."

A related source of tension in asb is a nervousness among many users that talking about their fetishes openly could cost them their jobs or marriages. These two concerns – avoiding possible harassment and the general desire for anonymity – have led to some new twists for Net writing.

The first asb innovation is the common use

questionable, or just unattractive.

One other subject that comes up again and again in asb is the power dynamics in S/M and bondage. How much power should one person have over another in a dominant/submissive relationship? In some S/M relationships, one partner takes on the role of master (or "top"), and the other becomes the slave (or "bottom"). Working within a set of prearranged limits, the master can command the slave to perform any number of tasks, from housecleaning to agreed-upon sex acts. The nature of this lifestyle is constantly debated in asb. Even bondage supporters sometimes attack the idea of voluntary slavery. ("Submission does damage and weaken; it does so by definition! To state otherwise is a consummate hypocrisy!") Many slaves defend their lives as part of a spectrum of consensual behavior: ("I have examined my life as a slave, and found that for me it is a wonderful and empowering experience. Acceptance of yourself is what really counts.") This debate has been going on for almost as long as asb has existed, and the arguments seem no nearer to any kind of conclusion. As in the real world, debate of such a fundamental question will probably go on forever – in what's known online as a Holy War.

It's the willingness to ask dangerous questions that makes asb so interesting and vital. It's one of the few places on the Net where you can find yourself genuinely surprised and illuminated about human desire each time you log on. Whether it's a college student asking the proper way to shave a friend's genitals or a drag queen sharing where to get a good deal on man-sized sling-backs, the openness, delight, and occasional anger of the postings show readers the extraordinary words and lives of ordinary people. Like the Internet itself, asb is open-ended and constantly evolving, and while it might comfort some to dismiss asb participants as marginal fringe-dwellers, don't forget that cyberspace users were those same fringe mutants a few years back. The edges of culture show you where the center is moving. In the end, both the Net and asb offer similar rewards – the expansion of options and possibilities. What more could you ask for? ■ ■ ■

Richard Kadrey (kadrey@well.sf.ca.us) is senior editor at Future Sex magazine as well as author of Covert Culture Sourcebook (forthcoming), and two novels: Metrophage and the forthcoming Kamikaze L'Amour. In 1983 he moved to San Francisco and has been in the fog ever since.

It's the willingness to ask dangerous questions that makes alt.sex.bondage so interesting and vital. It's one of the few places where you can find yourself genuinely surprised and illuminated about human desire each time you log on.

who often happily refer to themselves as perverts, were shocked by "Diane."

Its title character is a 37-year-old housewife and mother who is kidnapped from her home and forced into sexual slavery by a secret group of rich and anonymous thrill-seekers; if Diane doesn't cooperate, she and her whole family will be killed horribly.

Most of the story describes Diane's "training," in which she is subjected to a series of relentlessly cold and brutal sexual scenarios. In the course of the narrative, Diane is raped, temporarily blinded, flogged, burned, electrocuted, forced to consume both feces and urine, pierced with needles, and almost drowned.

Many casual readers might be horrified by the individual scenes of predatory sex in the Diane stories; however, the controversy in asb didn't concern any of the individual acts, but rather Diane's unwillingness to participate in them. Many dominant and submissive relationships include one person inflicting pain on a partner, but always with that person's consent. Consent is the key concept in S/M and bondage relationships. "Diane," however, is entirely

of a "blind" or "anonymous server," to which users can send messages to be forwarded to the appropriate destination. (See "Anonymously Yours," page 50.) The only return address that appears on the message is that of the server. In the case of asb, the most common anonymous server address you'll find is anon.penet, the address of a computer in Finland.

"Spivak gender" is another new convention that's gaining popularity with some asb users. The idea behind Spivak gender is to replace our current set of gendered pronouns with a genderless set. This provides a degree of vagueness about identity and sexual orientation conducive to more adventurous postings.

A proposed set of "Spivak gender" pronouns includes "e, em, eir, eirs, eirself, sie." In Spivak-speak, "She talks to herself," would become "Sie talks to eirself," "sie" being a substitute for both "he" and "she." But don't think that if you dip into asb you're going to be greeted with indecipherable codes. Spivak pronouns aren't close to replacing the standard set yet, and many users object to the whole idea of new pronouns as being obscure, grammatically



PLAYED FIRST
GAME OF
EQUINOX.



AFTER YEARS
OF PRACTICE,
STILL TRYING
TO CONQUER
THE THIRD
DUNGEON.



HAD TO SKIP
GRADUATION
CEREMONY,
BUT FINALLY
CONQUERED
THE THIRD
DUNGEON.



STILL LIVING
AT HOME,
NO JOB,
NO FRIENDS,
NEVER KISSED
A GIRL, BUT
FINALLY
DEFEATED THE
GREEN BLOBS
IN THE FIFTH
DUNGEON.



HAVING
TROUBLE
SEEING THE
SCREEN,
AND NEED
TO TAKE
NAPS
BETWEEN
DUNGEONS,
BUT YOU
CAN NOW
GET TO
THE SIXTH
DUNGEON
WITH EASE.



CAN'T SEE
THE SCREEN,
CAN'T HEAR
THE SOUND
EFFECTS,
CAN'T WORK
THE JOYSTICK
AND HAVING
CHEST PAINS
AT THE
THOUGHT
OF THE EVIL
EMPRESS.
FEELING THE
END IS NEAR,
YOU VOW TO
SOMEDAY
COMPLETE
YOUR QUEST
AS YOU
BEQUEATH
YOUR JOYSTICK
TO YOUR
GRANDSON.



WELCOME TO THE 7 DUNGEONS OF GALENDONIA,
AN UNDERGROUND WORLD FULL OF GHOSTS,
BATS, BLOBS, AND EVIL WOMEN. THEY ALL WANT
TO KILL YOU, BUT DON'T TAKE IT PERSONALLY.



YOUR JOURNEY TO RESCUE SHADAX WILL
SPAN OVER 450 SECRET CHAMBERS.
WITHOUT YOUR MAGIC DAGGER, IT WILL
SPAN ABOUT TWO SECRET CHAMBERS.



AFTER A LONG, BLOODY BATTLE WITH BOSS
CHARACTER SUNG SUNG, YOU'VE EARNED A
STRING FOR GLENDAL'S HARP. IT'S A SMALL
REWARD, BUT AT LEAST YOU'RE NOT DEAD.



YOU'VE SURVIVED TO DO BATTLE WITH SONIA,
THE EVIL EMPRESS. NOTHING CAN STOP YOU NOW,
EXCEPT THE GIANT BLOOD-SUCKING BAT THAT
WANTS TO GNAW ON YOUR NECK. GOOD LUCK.



(sure, it's just a game.)



The Electric Paperless Prototype

Everybody's favorite digital fantasy of living a paperless life
got a two-year tryout in the glass ark of Biosphere 2.

Kevin Kelly visits and finds it's still a fantasy.

Whatever else you might say about the Biosphere 2 experiment in Arizona, you've got to give the eight people who agreed to be sealed in a glass bottle for two years credit for this: They are the only folks so far to attempt to live an information-intensive life without paper. For 24 months nothing was to be brought in or out of the sealed ark. Paperless existence became one of the first obvious design goals.

Sure, lots of people have talked about paperless life, and many have actually taken vows to reduce their paper consumption and recycle what they do use. But to my knowledge, the biospherians are the only ones to have tried living out the fantasy for any length of time. In September 1993, when the eight bionauts marched out of their big glass house, they had a lot to say about the feasibility of living without paper. Their message: "Paperless life is just possible."

An airtight glass ark the size of an ocean liner, Biosphere is stuffed with seven very dense and compact ecosystems ranging from a bona fide rain forest to a small coral reef lagoon. It is also stuffed with some of the most complex mechanical systems built – for air, water, heat, electricity, and information. During their stint inside, the biospheri-

ans were expected to raise their own food, keep the weeds down in the wilderness areas, keep all the machines running, and write scientific papers. To do this, they ordinarily processed the following hunks of data and information: Each day they completed a checklist noting the working status of 60 motors, 50 miles of cables, 100 pumps, and innumerable valves. They were in 24-hour radio contact with colleagues inside the big ark and outside at mission control, 300 feet away. They recorded every bit of food harvested, how much it weighed, how much was eaten (as well as how many calories it contained), and how much matter was returned to compost. They frequently connected via videoconferencing hookups to classrooms around the world. They exchanged their atmospheric data with scientists outside and organized six scientific workshops altogether with these far-flung participants. They recorded their water use and where the water went. They measured plant growth and mapped species movements within the ark. They received electronic faxes of late-breaking news. They got cable TV.

They worked on scientific papers to be published, complete with peer reviews from outside scientists and extensive citations of other papers. They sent and received volumes of internal e-mail regarding everyday management of their project. A few of them ventured into the Internet cloud to seek information and companionship; this added exponential numbers of e-mail messages and list postings. Half of the biospherians were involved in managing businesses or second jobs while inside. And about half also pursued advanced academic degrees during their two years away from paper. These folks were not digital slouches.

In between the first and second "closures" of Biosphere 2, I visited the site to see how close to paperless the biospherians actually got. Their human habitat, as they like to call it, was amazingly spacious, ultimately modern. They enjoyed a large meeting/dining room/kitchen area, outfitted with plush lavender carpet and marblish decorating touches. There was a phone at every corner. Indeed, there were phones hidden throughout the place, even in the wilderness area. Inside each apartment was a computer with a modem, as well as a bed, storage space, a phone, and TV. Each biospherian also had a computer in a common workplace.

By and large, the bulk of the information processing was done from the biospherians' personal desktops. Although they brought in laptops, they didn't use them portably. They didn't find palmtops or personal digital assistants (PDAs) to be of much use for their chores either. The biospherians (eco-serfs I called them) used their hands a lot in manual labor. They said what they wanted was "handless" voice input, so they could read out data as they harvested crops or hauled compost. Lacking this device, the biospherians would sometimes use their walkie-talkies as a substitute. As their hands sized up plants, they would speak the measurements into the radio, while someone outside would jot down the numbers on a computer and relay the data back to them inside to check. Not very elegant, but it worked.

Even though they managed to forgo paper in the bathroom, in reality biospherian life was not completely paperless. Paper was used for field notebooks with pencil "input." There's something about the compact reliability of a notebook that is still hard to beat. They also had a book library – eclectically stocked – which reminded me of the odd lots of books you find shelved in vacation cottages.

Outside of the field notebooks and this library, the ark buzzed with data. Noberto Alvarez-Romo, the project's director of cybernetics, calculates that the biospherians collectively received 10,000 faxes. These faxes never saw paper, having



**Abigail Alling
at work in the
command center
of Biosphere 2:
It was a grand
experiment,
but paper was
unavoidable.**

been projected instead onto desktop computer screens. The resolution was adequate for reading them, except when material was faxed sideways.

Somewhat surprisingly, Biosphere 2 was not wired with fiber-optic cable. Instead, it used coaxial cable, which, given the short distance, proved to be cheaper to install and maintain. Videoconferences took place on a regular basis. There were several stations inside where the biospherians could link up with fixed cameras and cabling. The best reception was via Picture-Tel, whose pictures ran over high-bandwidth telephone lines. I participated at the other end of one hookup with the biospherians; the quality was impressive. There was a slight, ragged delay between Arizona and San Francisco, but overall the picture and sound reminded me of a home videotape – only in real time.

The biospherians were big on e-mail. Since they were in the limelight, they encountered about a 10-to-1 ratio of inbound mail to their outbound. In addition to reading Usenet groups, some biospherians also participated in forums on PeaceNet, EcoNet, and the Well.

Biosphere 2's grand experiment was to determine what could be learned from a self-sustaining closed system – nothing in, nothing out, except energy and information. But in the second year of the mission, the Biosphere Scientific Advisory Committee recommended that the scientists relax their strict import rules and allow some paper into the bottle, as long as the material was recorded. So on request, the biospherians could import needed medical journals (they experienced low oxygen conditions inside) and research documents for their own scientific papers and classes (diagrams in journals turn to mud during faxing).

The printed matter the biospherians most requested (but never got) was *TV Guide*. The support crew balked at having to fax it in so often. I got the impression the biospherians had their sets tuned to CNN *Headline News* as a default. To compensate for a lack of TV schedule listings, the support center served as a minor video-on-demand center. The biospherians sent constant requests asking the support crew to load rented, newly released movies into the VCR outside and pipe them into the ark. Saturday nights quickly evolved into Double Feature Night.

A few biospherians got desperate enough for text news to have an entire book faxed in or e-mailed in as ASCII. The slight hardship of reading a book on screen and not being able to mark it, as well as the long downloading time needed to get the text, dampened their enthusi-

asm for electronic books. Less than a dozen paperless books were read in the first "closure."

The point of Biosphere 2 was to demonstrate that no organism or habitat is an island. One of the biospherians, Linda Leigh, said of her try at a paperless habit, "We discovered that true paperless living requires lots of people outside who are also paperless. You can't really be an island of paperless life." Linda explained that she could only write to others via e-mail or fax, and many recipients had only paper fax machines. Thus she generated more paper than she wanted to. Ordinary paper letters mailed to the biospherians had to be opened, scanned in as faxes, read over the phone, or held up to a window – all time-consuming activities. Even with that help, twelve boxes of paper mail awaited the biospherians' re-entry.

The most common complaint the biospherians had about living without paper was that they couldn't find stuff after they had filed it. After storing two years' worth of personal, work-related, and media and news data (estimated at 4 gigabytes of information per biospherian) little bits of it seemed to disappear easily. Paper can get lost too, of course, but the visual clues provided by paper on a desk or shelf do make it easier to retrieve.

On March 6, 1994, a second crew of six biospherians sealed themselves up for ten months of paperless life. They are experimenting with one or two palmtops and have upgraded their IBM clones with more RAM and power. They've installed more portable and remotely controllable video cameras. And for future missions they are putting more of their operating manuals online in the form of custom CD-ROMs.

The original Biosphere crew felt they came within 80 percent of being comfortably paperless. They could live with reading everything on a screen. They delighted in creating purely digitized data for others, and they loved the immediacy of e-mail and video hookups. But they missed newspapers and magazines. Their primary request was for two major advances: improvements over hand-generated input in the field and superior tools for retrieving, managing, and coordinating gigabytes of stored electronic information. Oh, and they never figured out a way to legitimately create their "signatures" for paper forms that demanded them. They used what the second crew will use: a person outside with power of attorney.

Biosphere 2: +1 (602) 825 6400. ■ ■ ■

Kevin Kelly (kk@well.com) is executive editor of *Wired*.



HAD TO
MISS YOUR
GRANDFATHER'S
FUNERAL,
BUT YOU
FINALLY
CONQUERED
THE EVIL
EMPRESS.

HE WOULD
HAVE WANTED
IT THAT WAY.



Interrupt-Driven

Short takes. Quick cuts. Channel surfing.

Restlessness. Anxiety. High stim. **Feeling wired?**

Or do you have **Attention Deficit Disorder**, the Yuppie Flu of the '90s?

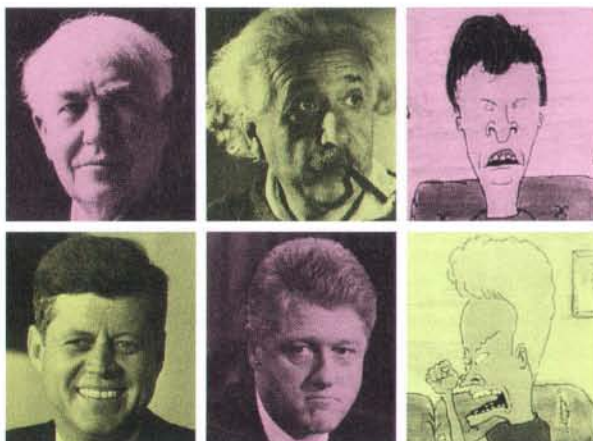


By Evan I. Schwartz

Hang out with Dave deBronkart and you will see why Attention Deficit Disorder (ADD) should be dubbed the official brain syndrome of the information age.

A desktop publishing consultant, deBronkart, 44, inhabits a home office in Salem, New Hampshire, that contains one thermos of coffee, two laser printers, three personal computers, four telephone/modem lines, and 500 little, yellow, sticky Post-its, each screaming its own reminder. He's often talking on the phone while responding to e-mail and printing out a

ADD sufferers claim Edison, Einstein, Kennedy, and even Clinton as colleagues in their disease; Beavis and Butt-head may reflect the illness' more culturally induced form.



newsletter – and thinking about something else entirely. “Technology lets me keep up with my mind,” he says. “It lets me try my ideas as soon as I can come up with them.”

The only problem is that deBronkart has trouble getting anything done. The smallest bit of incoming information, the quickest fleeting thought, or the slightest peep from a family member has the potential to derail deBronkart from whatever work he really should be doing. He might not get back to the task at hand for hours, days, weeks.

As it affects adults such as deBronkart, ADD is a little-understood but surprisingly common brain imbalance. The disorder is genetic, according to some researchers, and it usually manifests itself first as childhood hyperactivity. But as the physical restlessness wears away during puberty, leaving mainly the attention span symptoms, the syndrome becomes harder to spot. While studies have shown that between 2 percent and 4 percent of kids show signs of hyperactivity, there haven't been any such studies on adults. Many psychiatrists who specialize in the disorder now believe that a similar proportion of adults have ADD – anywhere between three and ten million people in the United States.

Those numbers get even higher when you consider all the people who just *seem* to have ADD. The symptoms of the disorder are “culturally syntonetic,” according to Drs. Edward M. Hallowell and John J. Ratey, two psychiatrists who authored a new book on the subject, *Driven to Distraction*. In other words, the ADD-type personality fits right into life in the high-tech, high-stim, fast-food, instant-gratification, short-attention-span, information-overloaded, overworked, media-saturated lifestyle that is America in the 1990s.

Adult ADD is marked not only by a short attention span but also by a multitasking mind. Anxious to avoid boredom, those afflicted are constantly scanning their environment, searching for all things captivating. They may read lots of books, but they finish few. They misplace things and require constant reminders. They are risk takers, thrill seekers, and, often, caffeine addicts. They are news junkies and channel-clicker/cable-surfers. In conversation, they often detour into parenthetical tangents, never returning to the main point. On the Net, they can't help getting lost in cyberspace for hours. Back on planet Earth, they interrupt people. They can't stand waiting in lines. They juggle too many projects and are chronically late.

But when something grabs their full attention, they can launch into hyperfocus marathons that last well into the night. It's not so much that they lack the ability to pay attention. It's more that they cannot control what they pay attention to and how long their attention lasts. Channeled properly, an ADD person can be explosively productive and brilliantly intuitive. On the other hand, ADD can ruin relationships and careers. Not surprisingly, many ADD adults can't hold down a traditional office job. That's why many set up shop surrounded by high-tech information tools in a home office, where they can impulsively act on swirling bits of information without driving other people crazy.

deBronkart, for one, was a bit hyperactive as a kid, though not impulsive or aggressive enough to cause real trouble. At college, however, he couldn't cope with the unstructured nature of his time. Too many things vied for his attention, and he became distracted. After barely passing freshman calculus, he was advised never to take another math course again – an odd evaluation for a kid who had scored a perfect 800 on his math SAT.

In many respects, deBronkart is a rather typical case, says Dr. Hallowell, who practices in Cambridge, Massachusetts. It was Hallowell who in May 1992 diagnosed deBron-

INTRODUCING VIVID3D. THE ULTIMATE IN MULTIMEDIA SOUND.

Get ready for the most realistic multimedia adventure ever. The VIVID 3D™ sound enhancement system from NuReality transforms ordinary multimedia sound into an amazing 3D sound experience. ★ What does "3D sound" mean? It means game sounds come alive all around you. It means you feel like you're in the

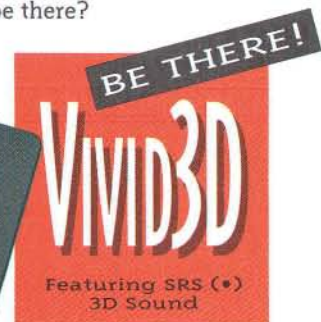
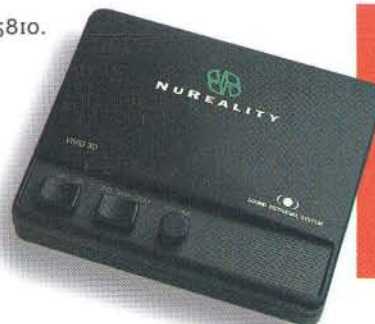
front row of a live concert. It means you'll never listen to your games or multimedia applications the same way again. According to *Electronic Gaming Monthly* magazine, the VIVID 3D "redefines sound as we know it." ★ The VIVID 3D is easy to



hook up to to any computer equipped with a sound card. Thanks to award-winning* SRS (•)® sound enhancement technology, the VIVID 3D creates dynamic 3D sound from only 2 speakers. ★ For a store near you, call NuReality at **800-501-8086**. Why just play games, when you can be there?

★ NuReality, 2907 Daimler St. Santa Ana, CA 92705-5810.

Telephone: (714) 442-1080, Fax: (714) 852-1059.



kart as having ADD. Like a growing number of psychiatrists, Hallowell and Ratey, an associate professor at Harvard Medical School, are frustrated that the American Psychiatric Association and other national groups have been slow to classify adult ADD as its own syndrome, distinct from the related childhood trait, which is known as Attention deficit and Hyperactivity Disorder, or ADHD. The conventional wisdom in the psychiatric community is that because grown-up ADHD patients are no longer physically restless, they are no longer afflicted with any disorder at all.

In the fall of 1990, that view seemed to be proven wrong. The *New England Journal of Medicine* published the results of a study prepared by a group of eight doctors. The article

"People seem to be developing a form of ADD without inheriting it," one doctor notes. "The information explosion has something to do with it – all the faxes and e-mail and calls come in, and people can't keep up with it."

repeated much of what was well known about ADHD – that it affects between 2 percent and 4 percent of school-age children, that the disorder tends to be inherited, and that treatment of the syndrome with medication, such as the central nervous system stimulant Ritalin, remains controversial.

But the article detailed this breakthrough: Using positron emission tomography to scan the brain, the study demonstrated that the adults with attention deficit symptoms in the study group had lower than normal levels of activity in the areas of the brain that control concentration and the ability to get back on track when distracted.

"The study provided credibility for the adult form of ADHD," says Benjamin Lahey, a psychiatric researcher at the University of Chicago. Since the article was published, there has been a growing awareness of adult ADD in the medical community. And thousands of adults with attention problems have been coming out of the closet.

One of the places these wired ones congregate is the Attention Deficit Disorder Forum on the CompuServe information service, where computer owners can dial in to read and respond to messages posted on electronic bulletin boards. The movement for such a forum began in 1991, when several members of the

Desktop Publishing Forum began noticing unexplained symptoms about themselves. One member, an entrepreneur in Atlanta named Thom Hartmann, had already suspected he had ADD and thought it would be a good idea to start a dedicated forum, which required approval from CompuServe executives in Ohio. After it was sanctioned and went online in May 1993, it quickly became one of the most visited of CompuServe's many health and fitness forums, as members were dialing in to post an average of 200 messages per day in the first month. Within eight months this little corner of cyberspace grew to 7,000 active members – perhaps the world's largest ongoing support group for the disorder.

Every day now, it seems, a new ADD patient

wanders in. A typical one is 46-year-old Francis Lawrence. Lawrence found out he had ADD at the same time his 8-year-old son was diagnosed with ADHD. He wrote:

I've just discovered this forum. And apart from my wife, this will be the first time that I've discussed my problem with other people. I have my own business, of course, after all I'm practically unemployable. In fact, I have two businesses, and true to form I dither between the two of them to the detriment of both. I now have two desks and three computers in my work space! Strange as it may seem I sometimes forget I have this problem and I think I can accomplish what normal people can. This however is a mistake. I need to work a lot harder at coming up with compensatory techniques. My biggest compensatory technique is to never let a client pin me down to a deadline. I will say that PCs are a godsend. It seems to me that using the PC to help organize your life is a heck of a compensatory mechanism for ADDers.

A favorite pastime for ADD Forum members is outing famous people who they suspect have ADD. According to various members, the history of ADD includes the likes of Einstein (he was nearly thrown out of college because of his

intense daydreaming), Edison (he greatly misjudged time and was threatened with lawsuits because he never got around to paying his bills), and John F. Kennedy (he would never sit still). Current favorites are Bill Clinton (he keeps a lot of balls in the air at once but catches few of them) and Bill Gates (he rocks back and forth and can't help getting immersed in new projects and hobbies). Having such successful people as ADD role models seems to make the forum members feel better.

Sometimes, the members reveal very personal symptoms. Carolyn Brown, 31, is trying to determine whether her love life is being ruined by ADD. She wrote:

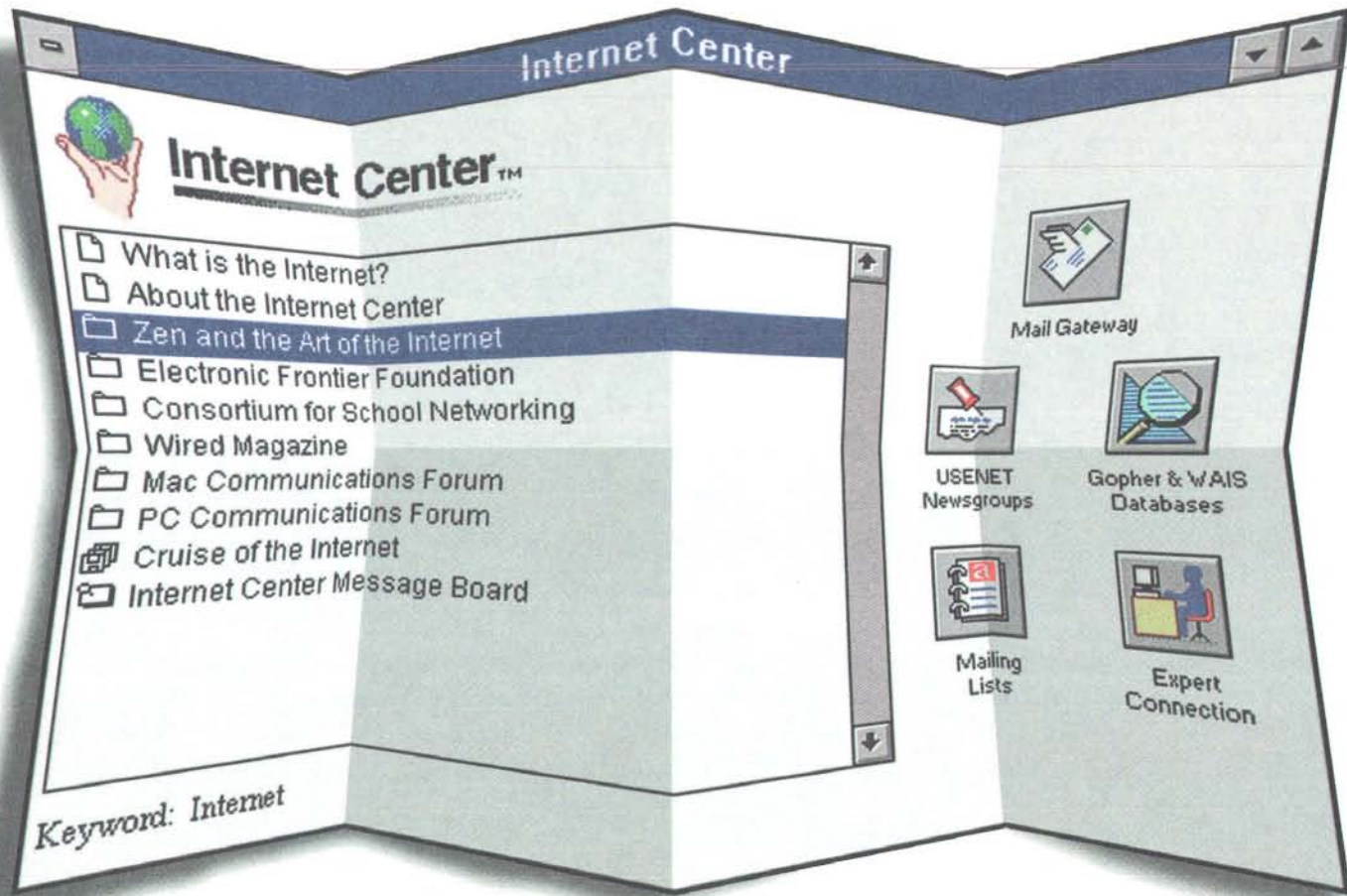
All my relationships have pretty much ended the same. I love my partners very much but monotony ("boredom") sets in and it ends up drastically affecting our sex life (I avoid it because I know it will pretty much be the same), and I begin getting more and more distracted (accused of being "non-feeling," "self-centered," "not caring about the other person," etc.). I get excited again when something happens, e.g.: new kitten, vacation, job change, etc. but "boredom" always returns.

Within six days of Brown's posting this note, there were more than 150 messages in response – offering advice, sympathy, and similar experiences. Certain stories have the markings of ADD classics. While rushing to get ready for the beach one day, an ADD adult named Nancy took multitasking a bit too far. Nancy massaged some 15-minute conditioner into her hair, put on a facial mud pack, stepped both of her feet into trays of water for a pedicure, and applied Nair to her bikini area. Then, she got a phone call. While talking, she forgot about her hair, face, feet and the rest of her beautifying. By the time she hung up the phone, the Nair had taken over new and unintended territory – a big surprise for her boyfriend.

With all this intrigue going down, it's no wonder that deBronkart became one of the ADD Forum's sysops. The pay is minuscule, and it eats up an enormous chunk of his time. But he feels he owes a lot to his fellow cyber-spacelings, for it was on CompuServe that it was first suggested to him that he had ADD. For most of his life, deBronkart couldn't explain why his mind wandered everywhere at once. Once he started to understand ADD, it all began to make sense.

For treatment, deBronkart went to Hallowell,

Your Road Map For The Information Superhighway.



America Online
Introduces
The Easiest Way
To Reach The
Internet.

Yes! I'd Like To Try America Online — Free.

Send me the free software and trial membership. I understand there's no risk — if I'm not completely satisfied, I may cancel without further obligation.



NAME _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

() _____

HOME PHONE _____

Select Disk Type and Size—

Windows*: ☐ 5.25 ☐ 3.5

DOS: ☐ 5.25 ☐ 3.5

Apple®: ☐ Macintosh®

☐ High Density ☐ Low Density

*To use America Online for Windows, you must have a 386 PC or higher, 4MB of RAM, a VGA monitor, a mouse, a modem, and a working copy of Windows 3.1.

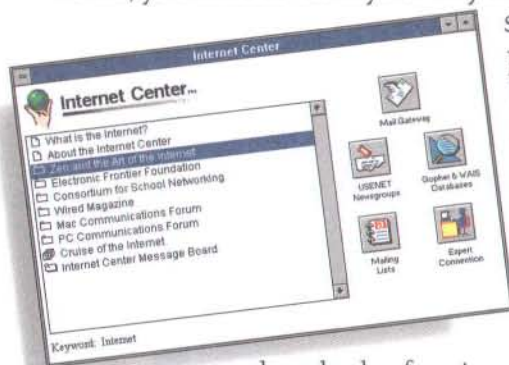
Use of America Online requires a major credit card or checking account. Limit one free trial per household. America Online is a registered service mark of America Online, Inc. Other names are service marks or trademarks of their respective owners.

0387/W

Test Drive The Internet On America Online For 10 Hours, Free.

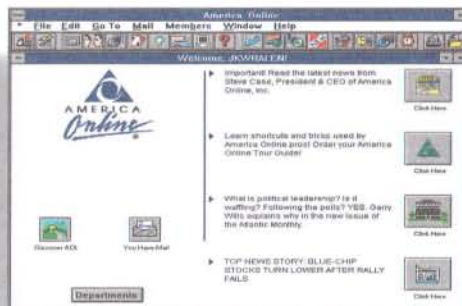
*The Internet Center, An
America Online Exclusive!*

Before you can exchange ideas with people around the world, you have to learn your way around the information



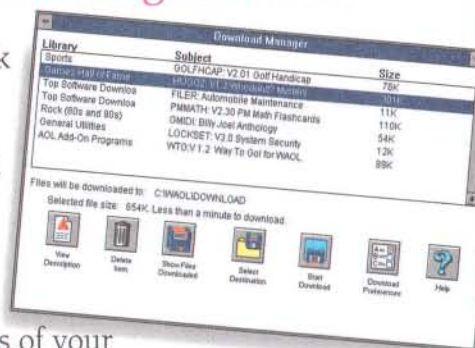
superhighway. No problem. Just go to our Internet Center — your road map to the Internet. You'll find we've made it as easy to handle as America Online. With a point and click, you can access USENET

newsgroups on hundreds of topics, send E-mail to other online services or overseas, access information on everything from home brewing to NASA news using Gopher and WAIS databases — and more. Best of all, on America Online, you can navigate the Internet without worrying about message counts, block counts, or surcharges — it's all at no extra charge!



*Plus, Expert Advice,
Fast Downloading And More.*

In addition to the Internet, you can check out everything that America Online offers. Get expert advice from over 300 hardware and software manufacturers and developers. Send comments and questions to the editors of your



favorite magazines. Exchange programs in our software libraries, featuring over 80,000 files to download. With multi-file downloading and 9600 baud modem access, it's fast and easy. Plus, you can join online computer clubs and special interest groups. You can even talk with other members in real-time conversations, conferences and classes. All on the most "clickable" online service there is.

*Start Your
Test Drive Today.*

So hit the information superhighway and head for America Online. It's easy. Just mail the attached card or fax it to us at 1-800-827-4595. Or simply call 1-800-827-6364, Ext. 0387. We'll send you everything you need to try it free.

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 9096 VIENNA, VA

POSTAGE WILL BE PAID BY ADDRESSEE

AMERICA
Online®

8619 Westwood Center Drive
Vienna, VA 22182-9806

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



AMERICA®
Online

(800) 827-6364, Ext. 0387



The following criteria for diagnosing Attention Deficit Disorder in adults are suggested only. They are based upon the clinical experience of Edward M. Hallowell, M.D., and John J. Ratey, M.D., and constitute what they consider to be the most commonly encountered symptoms in adults with ADD. These criteria have not been validated by field trials and should be regarded only as an informal guide.

A person with a chronic disturbance would answer "yes" to at least fifteen of the following questions:

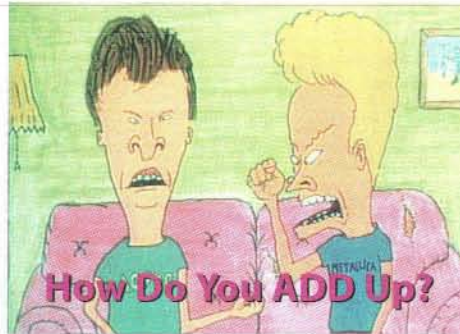
- | | |
|---|--|
| 1. Do you have a sense of underachievement, of not meeting your goals, regardless of how much you have actually accomplished? | 4. Do you often juggle many projects simultaneously, but balk at follow-through? |
| 2. Do you have difficulty getting organized? | 5. Do you have a tendency to say what comes to mind without necessarily considering the timing or appropriateness of the remark? |
| 3. Are you a chronic procrastinator? | |

6. Do you find yourself in an ongoing, restive search for high stimulation?
7. Do you have a tendency to be easily bored?

- with an ability to hyperfocus?
9. Are you considered creative, intuitive, or highly intelligent?
10. Do you have trou-

12. Are you impulsive, either verbally or in action – as in impulsively spending money, changing plans, enacting new schemes, or altering career plans?

16. Are you frequently restless, with lots of "nervous energy"?
17. Do you have a tendency toward addictive behavior, be it alcohol, caffeine, shopping, eating, or overwork?



8. Are you easily distractible, with trouble focusing attention and a tendency to tune out or drift away in the middle of a page or a conversation – often coupled

- ble going through established channels or following proper procedure?
11. Are you impatient, with a low tolerance for frustration?

13. Do you have a tendency to worry needlessly, alternating with inattention to or disregard for actual dangers?
14. Do you have a sense of impending doom, insecurity, alternating with high risk taking?
15. Do you experience mood swings or depression, especially when disengaged from a person or a project?

18. Do you have a chronic problem with self-esteem?
19. Are you inaccurate at self-observation, often misjudging the impact you have on others?
20. Do you have a family history of ADD, manic-depressive illness, depression, substance abuse, or other disorders of impulse control?

who prescribed Ritalin, a stimulant that is believed to activate the same part of the brain that was observed in the *New England Journal of Medicine* study. "The first day I took Ritalin, a thought came into my mind and I said, 'No. It isn't time for that now,'" deBronkart recalls gleefully. ADD patients compare Ritalin to putting a new antenna on a radio: It eliminates the constant static, distraction, and interference commonly picked up by an ADD brain. Although he is no longer on it, the drug helped deBronkart get his life and thoughts organized. "I now have the ability to go back to whatever I was talking about."

Ritalin may indeed be too effective. Some psychiatrists are now beginning to worry that ADD is becoming somewhat of a fad, sort of how "chronic fatigue syndrome" became the yuppie flu a few years back. They also worry that Ritalin is fast becoming another popular personality pill – like Prozac.

Lahey, at the University of Chicago, warns doctors about inappropriate treatment of patients who might not have any real disorder at all or who might have a more severe mental illness, such as schizophrenia.

Perhaps most worrisome of all is that thousands of people with no genetic predisposition to ADD or ADHD seem to be coming down with it. Hallowell has a theory about this phenomenon. He calls it "culturally induced ADD," or "pseudo-ADD." While as many as ten million adults in the US may have the genetic, inherited form of ADD, untold millions may be experiencing pseudo-ADD, according to Hallowell.

"Everyone is distractible to some extent," Hallowell says. And it's getting difficult to distinguish between real ADD and pseudo-ADD.

Other doctors have encountered the same phenomenon. "People seem to be developing a form of ADD without inheriting it," says Dr. Theodore Gross, a pediatrician in La Jolla, California. "The information explosion has something to do with it – all the faxes and e-mail and calls come in, and people can't keep up with it." Gross started a software company called PVA Systems to market a surprisingly successful program that helps people cope with one of the common byproducts of ADD – an inability to read for more than a few minutes. The program, FlashRead, tries to improve concentration by quickly flashing successive seg-

ments of sentences. Gross created it for kids. But adults have become its main users.

Could ADD be subverting our culture in subtle ways? Consider this list from the Hallowell-Ratey book: "The fast pace. The sound bite. The bottom line. Short takes, quick cuts. The TV remote-control clicker. Restlessness. Anxiety. Ingenuity. Creativity. Speed. Present-centered. No future. No past. Disorganization. Mavericks. A mistrust of authority. Video. Going for the gusto. Making it on the run. The fast track. Whatever works. Hollywood. The stock exchange. Fads. High stim." All of these hallmarks of America's high-tech culture are also typical of the ADD and pseudo-ADD personality. With so many of these people running around, we could be becoming the first society with Attention Deficit Disorder. ■ ■ ■

As we went to press, we learned of an Internet support group for ADD: alt.support.attn-deficit. FTP: <ftp://ftp.netcom.com/pub/lds/add>.

Evan I. Schwartz (morphman@aol.com) enjoys trolling the Net while talking on the phone, eating a sandwich, and listening to the radio.

Anonymously Yours



You don't have to wait for cryptography to secure complete anonymity on the Net. All you need is the address of a remailer.

An Interview with Johan Helsingius

He can give you your own PO Box on the Net.
By Joshua Quittner

Johan Helsingius is the 32-year-old president of Penetic, a Helsinki, Finland, firm that helps businesses connect to the Internet. His hobby is running a controversial anonymous remail server on the Internet, anon@penet.fi. Think of it as your own secret PO Box on the Net. Anyone can send e-mail

to the server. Unlike some other such servers, anon@penet.fi also forwards replies to you. (Send e-mail for further instructions.) We caught up with Helsingius recently at the Massachusetts Institute of Technology.

Wired: What's the setup of penet.fi? What kind of computer do you use, where is it, and so forth?

Helsingius: It's a generic 486; I don't even remember the brand. It's just a typical 486 box. The current machine has been in operation for something like a half a year –

an earlier 386 ran out of steam pretty early.

Where physically is it?

That's something I probably wouldn't like to discuss. It's not in my house. It used to be. It's now somewhere that I have access to, but I wouldn't like people to know where it's located. It's in a machine room at a business in Helsinki, a pretty big business with lots of machines. Nobody knows except a couple of guys who are running the computing room. It's not in a university, because at universities you always run into political problems.

I'm a bit paranoid about people getting access to the actual server. I think there are lots of people around who'd like to have that database, the database correlating the real people to their anonymous handles. That's kept forever, but I don't keep copies of the messages that actually go through the machine. **52 ►**

How to Launder Your E-mail

You say you don't want to be identified?
By Steven Levy

In Orson Scott Card's classic sci-fi thriller *Ender's Game*, two key characters participate in a futuristic version of Usenet political discussion groups, posting messages of such pith and powerful reasoning that they sway the collective thought process of an entire planet.

But none of the readers of the compelling electronic missives written by "Demosthenes" and "Locke" know the authors' true identities: They have used technology to obscure the electronic trail by which the messages travel. So no one knows that the two most influential writers in that society are a brother and sister – ages 12 and 10, respectively.

Can you send messages and post to the far reaches of the Net today with the same assurance of anonymity? Breakthroughs in modern cryptography indicate that one day it will be universal and simple, but some people have decided not to wait. They are a small, semi-organized band of cypherpunks and privacy freaks who are the keepers of the far fringe of anonymity: They are the people who run "remailers."

A remailer is a free service allowing you to send an electronic message without the otherwise mandatory return address. Thus you can "launder" an e-mail letter by detouring it through a remailer before it reaches its ultimate destination. When your posting arrives, the recipient will have no idea where it comes from – and it will be impossible to find out.

Basically, remailers work the way you think they might. You send a message to a remailer. The operator automatically strips off the telltale header from the message and passes along only the content.

Doesn't that require you to invest a lot of trust in the remailer operator? Sure, too much – if you use only one remailer. But there's a remedy. Seekers of anonymity don't rely on a single service, but commonly use special remailer-chaining software to shoot a message through a series of remailers – often hitting some remailers more than once. Only the first remailer sees the real return address. You don't have to trust that first operator – your ultimate secrets will be safe if the second **continued next page ►**



In a secret location, Johan Helsingius runs an Internet remail server that can give online anonymity to anyone.

operator is trustworthy. Or the third. Or fourth. Only conspiracy theorists will believe the scenario that *all* remailer operators are turncoats. (Some experimenters have bounced a message through a hundred remailers!)

Worried about the first guy reading the message and linking it to you? There's a fix for that. Using a public-key cryptography program like Phil Zimmermann's Pretty Good Privacy (see "Crypto Rebels," *Wired* 1.2, p.54), the chaining technique can also reasonably assure the sender that nobody in the remailer system has the ability to read the message until it is so deep into the system that its origins have long been obscured. This is done by encrypting the message with the public key of the final remailer on the chain. In that case, the message can only be read by the operator of that remailer (who has the specific private key that will decipher the message) – and none of the operators at earlier stops can read the mail.

You can get even tighter security by putting that final message in another public-key-encrypted package, to be deciphered by the penultimate remailer who gets the message. And so on, envelopes within envelopes, until

the message's privacy is virtually assured.

"It's like getting a tape of microphone hiss," says Eric Hughes, founder of the Cypherpunk mailing list, describing what earlier remailer operators can see of an encrypted message.

There are currently about twenty remailers operating, but they come and go, especially

headers. On the other hand, there's now a way for victims of sexual crimes or whistle-blowers to send mail and messages with the assurance of privacy. At this point, however, probably the most important role that remailers play is to launch a necessary dialogue on the issue of anonymity in a digital society. What

They are a small, semi-organized band of cypherpunks and privacy freaks who are the keepers of the far fringe of anonymity: They are the people who run "remailers."

since many network providers have problems accommodating them. Anonymity is scary stuff. Quite reasonably, administrators worry about terrorists claiming credit for bombings or kidnappers posting random notes (the very reason the National Security Agency gives to justify its Clipper Chip standard – see "Don't Worry, Be Happy," page 92).

Even in their experimental infancy, remailers have had an effect on Net culture. On one hand, there's been an outburst of harassing or simply idiotic flames that have no return

are the benefits and the risks? Even if we don't want it, can we stop it?

For more information on remailers, including a current list, you can download information from the ftp archive at soda.berkeley.edu/pub/cypherpunks/remailer.

Use them wisely. ■ ■ ■

Steven Levy (steven@well.com) writes the "Iconoclast" column for Macworld magazine. His article on Bill Atkinson and Andy Hertzfeld appeared in Wired 2.04.

IT'S A WHOLE NEW WORLD OUT THERE.

Welcome to Ray Dream Designer 3.0

Forget the past, forget the expected.

There's a new dimension in graphics today, and you can only experience it one way – with Ray Dream Designer® 3.0, the best-selling 3D illustration application. It's 3D like you've never seen before. Now you can create full-color, 3D graphics – including perspectives, shadows, lighting, textures and reflections – automatically. And you can start working with its simple, familiar interface today. Create complex 3D shapes easily with Designer's exclusive Modeling Wizard.™ Then brush color and texture directly onto the surface of your objects with 3D Paint. Designer supports virtually every industry standard, and works with Adobe Photoshop® and Fractal Design Painter®, as well as Adobe Illustrator® and Aldus FreeHand®. The new world's waiting and it's yours for only \$349. Call Ray Dream today. **800-895-4405**

◀ **Interview, 50** How do we know that you don't read any of the mail that flows through penet.fi?

You don't. There's absolutely no way I could guarantee to anyone, I mean really prove I'm *not* looking at the stuff. There's no way to prove it. People just have to trust me.

Do you use it yourself?

I haven't actually posted anything through the server, except using the administrative account

I'm a bit paranoid about people getting access to the server.

There are lots of people around who'd like to have that database.

anonymously. I actually don't use it myself, nope. I never had the need. But I can definitely relate to people who have the need. Who has the need? People who want to talk about things having to do with minorities. I actually belong to a Swedish-speaking minority [that makes up 4 percent of Finland's population]. I was born in Finland to Swedish-speaking parents. It's not a problem but it sort of makes you appreciate the problems. There are some situations where I

wouldn't want people to know I belong to the Swedish-speaking minority.

So why do you run an anonymous remailer?

It's important to be able to express certain views without everyone knowing who you are. One of the best examples was the great debate about Caller ID on phones. People were really upset that the person at the receiving end would know who was calling. On things like telephones, people take for granted the fact that they can be anonymous if they want to and they get really upset if people take that away. I think the same thing applies for e-mail. . . .

Living in Finland, I got a pretty close view of how things were in the former Soviet Union. If you actually owned a photocopier or even a typewriter there you would have to register it and they would take samples of what your typewriter would put out so they could identify it later. That's something I find so appalling. The fact that you have to register every means of providing information to the public sort of parallels it – like saying you have to sign everything on the Net. We always have to be able to track you down.

Who really needs to use an anonymous remailer?

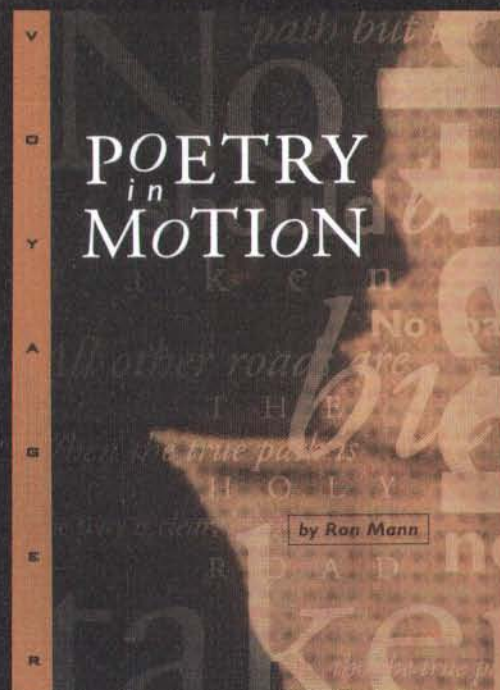
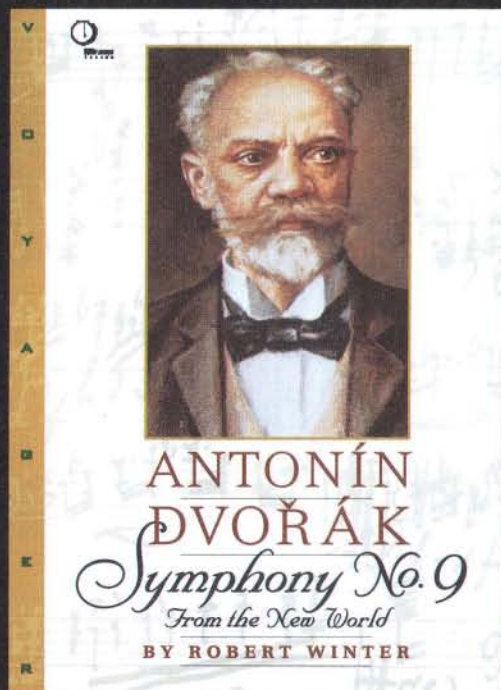
It's clear that for things like the Usenet groups on sexual abuse, people need to be able to discuss their own experiences without everyone knowing who they are. Where you're dealing with minorities – racial, political, sexual, whatever – you always find cases in which people belonging to a minority would like to discuss things that are important to them without having to identify who they are.

But there are other people who use it, too, right? You mentioned people who posted questions to groups on child rearing and programmers who wanted to ask technical questions anonymously.

That's right. Posting technical questions because they're really afraid they don't know what they're *supposed* to know. A more important case would be someone who, for example, found out that his or her computer had a bad security problem and the manufacturer wasn't doing anything about it.

How long does it take for a message to go through your machine, have any traces of the user's identity stripped, and move on?

Theoretically, it only takes a couple of minutes. But the machine has been really overloaded lately, and delays can stretch up to a few hours.



It's currently handling about 4,000 messages a day. I'm actually about to rewrite the software to be more efficient.

You've been the target of a number of attacks, I understand. Someone said your server was shut down recently when someone from the US government complained to Finnish authorities?

It wasn't actually someone from the government in the US. It was someone who was pretty well known on the Net, a guy who has been on the Net for a really long time. I don't want to say who he is because I feel he didn't know his actions would result in a shutdown.

It was a short shutdown and never a complete shutdown - I shut down the posting part for something like two to three weeks, but mail still worked and I re-enabled the full service pretty soon.... I shut down because of the sensitive nature of the connection. The international network connection went through the Finnish University net, FUnet, and this man complained to the domain administrator at FUnet. He said basically that the anon server was generating lots of junk traffic on the Net. He was saying it wasn't a good thing. Most of it was just stuff like silly arguments, personal attacks against peo-

ple. The domain administrator contacted me and said he had received complaints; because of the delicate situation with the international connection, I thought it was best to restrict the service for some time until we actually got the international thing sorted out.

Some people are very hostile to your setup, aren't they? People have tried everything from "saturation mail bombings" to anon-mail-eating worms, right?

Saturation bombings actually happen every now and then. About once a month someone tries to send 100 Mbytes of something. It's random data mostly. When that happens you either get lots of delays or start losing data.

Mostly at that point the traffic goes so high the service provider notices it and contacts me and I ask to have service blocked from that site for a couple of days. I know it's not the same person doing it. It seems to come from random sites.

What about the anon-mail-eating worm?

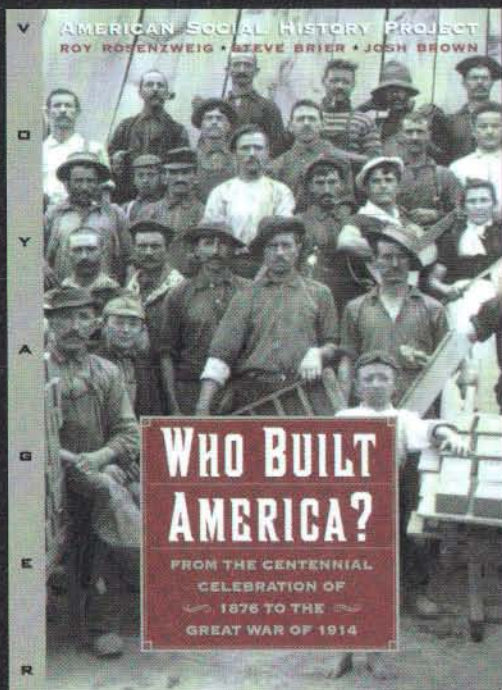
It was just a really silly scheme, the cancel bomb. Someone wrote a program to automatically cancel anonymous messages. The basic idea was to send out cancel messages for all the anonymous postings. But it actually backfired

pretty badly, both politically and technically. Politically, there were lots of people who got really angry about censorship - that their articles were canceled and that someone was actively censoring stuff, trying to play network police. As far as technically, there was some problem with the software, so it actually ended up posting hundreds of messages on *usenet.admin.something*. There were just lots of garbage messages there suddenly and everyone got really pissed off and a few mail servers crashed from the load.

You could make a lot of money selling some of the secrets of cyberspace, couldn't you?

There was an April Fools' joke last spring, an e-mail message coming from an obscure site in South America, saying that someone had managed to crack my machine and get access to the database. They posted something like, "If you wish to know under which ID someone's posting, just send \$10 to us. For well-known net personalities, send \$50." ■ ■ ■

Joshua Quittner (quit@newsday.com) covers technology for Newsday. He co-wrote the high-tech thriller Mother's Day with his wife, Michelle Slatalla.



VOYAGER

cd-roms

Bring your brain.

For catalog call 1.800.443.2001

(Outside U.S. 1.914.591.5500)

Pomo To Go

A User's Guide to Trendy French Intellectuals

By R.U. Sirius

We can trace the French quality of huffiness all the way back to Voltaire. Or take Sartre, please. The big names now are Bataille, Deleuze, Derrida, and Baudrillard: the fab four of postmodernism.



Voltaire



Rimbaud



Sartre



Baudrillard



Derrida



Deleuze



Bataille

contradictory words striking against one another in paroxysms of pleasurable non sense – now that's what I call an afternoon's fun.

The legacy of torturous French writing certainly predates the likes of de Sade. Indeed, we can trace that French quality of huffiness all the way back to Voltaire. Or take Sartre, please. Only a Frenchman could come up with a philosophy of complete individual freedom and responsibility and use it to justify Maoism. (American college students in the 1960s don't really count in this regard. We're talking elegantly phrased philosophy here, not youthful rituals of self-righteousness.) I don't know whether Pol Pot shared *vin et fromage* with the nauseous one, or if he preferred the more violent thinker, M. Jean Genêt.

But this is all old news. The big names now are Bataille, Deleuze, Derrida, and Baudrillard: the fab four of postmodernism. Generally, the French pomo thinkers succeed at two things: They offer a hysterical (read paranoid) but insightful perspective on the cruel and schizophrenic nature of late

20th century techno-culture, and they engage in linguistic sophistry to try to save Marxism's irrelevant ass. Trendy French thinkers deal with language and reality in techno-terms; in other words, they view it all as a big machine or a complex system. And they therefore exert great influence on the cybercrit (genus academia) segment of cyberculture.

Reading any of these guys is exhausting, and it takes valuable time away from watching television advertising, which generally communicates the pomo experience with that American kind of immediacy that we all crave – even when it's on behalf of Trendy French Perfumes. This is why I'm providing you with this handy guide to Trendy French Intellectuals. Quicker and easier even than *Monarch Notes*, this guide will give you enough information to banter in hip academic circles and, believe me, quoting Lacan can get you laid.

Let's start with some historically influential French thinkers. You need to know them because even though they are not directly related to the philosophies of postmodern discourse, they influenced the guys in the latter half of this guide – the really trendy ones.

Voltaire

Voltaire was the icon-at-large and philosopher-punk of the Age of Reason. He's best known for his tale *Candide*, which expressed his contempt for those among his contemporaries who denied the existence of evil. Voltaire was an original flamer, creating that top note of bitchiness without which the arrogance of French philosophy would have been impossible. He offended so many people during his career that many were surprised he died of natural causes, in old age.

De Sade

Working from his first-hand experience of the French aristocracy and the French Revolution, the Marquis de Sade used dense and darkly beautiful language, heavy with irony and sexual reference, to express his conviction that life was absurd. He spent 27 years in various states of imprisonment and detention in French prisons and castles as a result. He is, along with Lucifer and Aleister Crowley, one of the West's most mythic Bad Boys.

Baudelaire, Rimbaud, Verlaine, and les Symbolistes

The French Symbolists of the 19th century took the "elegantly wasted" decadence of British fops like Coleridge and supplemented it with the language of romantic hysteria. The speed and jumpiness of these poets predates and predicts the cut-ups of William S. Burroughs and the dense language of

Kai's Power Tools™ 2.0

for Macintosh and Windows

Divine the Future of Imaging

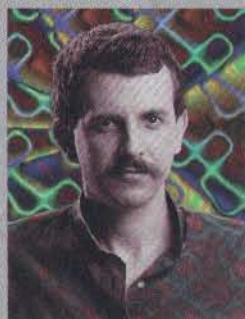
Everything's brighter when you plug in the award-winning Kai's Power Tools to leading image editing packages like Photoshop, PhotoStyler and Painter.

Thirty-three fantastic extensions and filters give you one-step solutions to complex graphics production jobs. And the power to summon dynamic gradients, infinite textures and awesome fractals for unlimited creativity.

It's serious graphics made fun!

And now a great standalone value!

- Mac users also get Color-It!, a 32-bit image processing paint program—FREE!
- Windows users also get Fauve Matisse Light, an exciting painting program—FREE!



Lee Varis
Digital Artist

"KPT is not only great for dazzling special effects, but it provides a wealth of tools for the nuts and bolts work we all do every day."

ABOUT THE IMAGE: Renowned digital artist/photographer Lee Varis of Los Angeles, Calif., filled in the world of "The Hermit" one in his series of haunting tarot card images, using Kai's Power Tools. The KPT Gradient Designer produced the glowing orb and its cascading rays, the KPT Texture Explorer created the card's border, while the KPT Sharpen Intensity filter brought out details in the rock. To build the dream-like landscape on the horizon, Varis used a beta version of the awesome KPT Bryce™, a powerful natural and supernatural 3-D landscape creation program—coming soon from HSC Software.

Ask
for
KPT
2.0
at fine
resellers,
including:

CompUSA
800.COMPUSA

Computer City
800.826.3928

MacZone
800.248.0800

Kai's Power Tools 2.0

SRP: \$199

Upgrades from

KPT Mac 1.0: \$49

Call 310.392.8441

HSC Software

1661 Lincoln Blvd. Suite 101

Santa Monica, CA 90404

310.392.8441

fax 310.392.6015

"Talk to us on America Online."

Keyword: HSC or KPT.

See Kai's Power Tools inside
the HSC Digital Theatre
(booth #6946) during Spring
COMDEX/Windows World,
May 23-26, 1994, Atlanta.



© 1994 HSC Software Corp. HSC is a registered trademark, and Kai's Power Tools and KPT Bryce are trademarks of HSC Software Corp. All other product names are trademarks or registered trademarks of their respective owners.

"The Hermit" © 1993 Lee Varis. Used with permission.

QuickTime® Unplugged.

With FlipBook software, you'll format, print and assemble high-quality color and b/w flipbooks of your favorite home-movies, animations and presentations. FlipBook is compatible with all QuickTime® applications, video interface hardware and AppleTalk printers. What's more, FlipBook ships with FlipPaper, a revolutionary paperform that's pre-perforated, laser-printable and easy to assemble.

Now at MacWarehouse!
800-255-6222
international sales: 908-370-4779

“★★★★”
Macworld 6/94

S. H. Pierce & Co.
Suite 323 Building 600
One Kendall Square
Cambridge, MA 02139 USA
617-338-2222 FAX: 617-338-2223

FLIPBOOK

FlipBook, FlipPaper and the FlipBook logo are trademarks of S. H. Pierce & Co. ©1994. Patent Pending. Other trademarks are registered property of their respective owners.

THE ONLY FAST, EASY, ECONOMICAL WAY TO CREATE LARGE-FORMAT PRINT JOBS.



With PosterWorks®, you'll quickly import, resize and crop your favorite page layouts, images and illustrations—on a pasteboard up to 10,000 square feet.

PosterWorks will drive your PostScript® printer beyond the bounds of any other desktop application, giving you variable tile sizes, gap between tiles, overlaps, tiling modes and hundreds of professional large-format production tools.

And using PosterWorks, you can send life-size layouts to one of our large-format service bureaus, giving you access to the latest large-format color printers and colossal sheets. Full color. Mounted and laminated. Big.

Only PosterWorks makes production and assembly of multi-tile jobs easy, whether you're creating a 3 x 4 foot poster or a 40 foot display.



For more info:

(617) 338-2222 (617) 338-2223 fax
Now at MacWarehouse! 1-800-255-6227

PosterWorks

S. H. Pierce & Co.
Suite 323 Building 600
One Kendall Square
Cambridge, MA 02139 USA
“★★★★”
Macworld 8/93
MacWEEK 2/23/93

PosterWorks and the PosterWorks logo are registered trademarks of S. H. Pierce & Co. Other trademarks are registered property of their respective owners.

ELECTROSPHERE

Spasm culture à la Arthur Kroker. Rimbaud's oft-quoted “intentional disordering of the senses” inspired the likes of Keith Richards and Patti Smith in more modern times. Today, after the H-bomb, LSD, MTV, and VR, we find even the most poetic among postmodern youth longing for a reordering of the senses. Ain't gonna happen, son.

Tzara and Breton

These two were among those who created the Dadaist and Surrealist movements. The Dadaists were this century's original media jammers, specializing in public acts of irrationality, scandal, and confusion. Dadaism eventually became Surrealism. The Surrealists agreed with Freud

are no divine laws then what you do is totally up to you and your desires and needs. Conversely, whatever happens to you is totally your own problem: The consequences of your choices are your personal responsibility. Somehow, in spite of this, he positioned himself 180 degrees to the left of Ayn Rand and Nietzsche. Imagine yourself dead. Your consciousness is completely annihilated, you have ceased to exist and you will never ever exist again. This is death as the existentialist imagines it. Enjoy!

Genêt

Georges Bataille said of Jean Genêt that he “chose to explore Evil as others have chosen to explore Good.” Jean-Paul Sartre saw Genêt as a

Pol Pot ordered his Khmer Rouge to execute all people with glasses – part of his war against intellectualism. Was Pol Pot's hostility a perverted irritation with the convoluted thought processes and obfuscatory language peculiar to French intellectuals? It seems, at least, a good guess.



that human consciousness, like an iceberg, lies mostly invisible beneath the surface. Surrealism attempted to explore the hidden areas of human consciousness through strange juxtapositions of words and images. As such, Surrealism is a favorite reference point for both the psychedelic and multimedia cultures.

Duchamp

Marcel Duchamp – inventor of modern appropriation in the form of the ready-made – changed the way the West sees art by showing that art is more likely to come from the eye of the artist than from the artist's hands. In other words, he demonstrated that artistic vision is more important than technical mastery. An elegant and quiet man, Duchamp is now honored in the art world, referenced by appropriationist collage artists like Negativland and John Oswald and blamed for Jeff Koons.

Sartre

Jean-Paul Sartre was an existentialist. That means that he took atheism seriously. Atheism implies that there are no divine laws. If there

saint. His romanticized view of the thief and the criminal was Americanized by Norman Mailer in the seminal 1950s beat-attitude essay, “The White Negro,” and may have ultimately led to a culture of Oliver North and Snoop Doggy Dogg. I leave it to you to fill in the blanks.

Debord and the Situationists

Guy Debord was the spokesperson for the Situationists International, social critics who, in the 1960s, were the first to suggest that *image* was the real commodity in our society and that image would replace more traditional goods in the economy of the future. To understand image as commodity, just consider the entire world of television – from the advertisers conflating their every product with sex, to the stars, their PR firms, and the gossip industry that makes them who we think they are. Also consider the consumer of television images and what he or she is purchasing from the couch. The Situationist concept of the “society of the spectacle” – in which living is replaced by viewing – maps perfectly to our culture of virtuality. The Situationists might be considered partly responsible

for the smug superiority and intolerance of today's politically correct.

Bataille

Georges Bataille was a French novelist and critic whose ideas very much influenced post-modern thinking about sexual politics and eroticism. In one of his most interesting collections of essays, *Literature and Evil*, Bataille argues for the primacy of what he calls "powerful communication," which he defines as privileged moments of supreme awareness based on emotions of sensuality, drama, love, separation, and death. In short, Bataille makes explicit the French intellectual's partly repressed tendency to be a drama queen.

Barthes

Roland Barthes's early work suggests that literature, in the traditional sense of the word, used language in the service of class divisions. (There, I just saved you from reading a few million words, most of them adjectives.) But the idea that traditional language excludes the exploited classes has unfortunately led to the attempt to alter language by foisting incomprehensible replacements on college students. Barthes also felt that authentic modernist literature would have to testify to its own ideological guilt. His point of view was well articulated by Bataille when he said, "Literature is not innocent." This was adopted by Sex Pistols's memetician Malcolm McLaren as "No one is innocent." You will note that M. Barthes didn't volunteer his own guilty ass for imprisonment or execution.

Baudrillard

Jean Baudrillard is a social theorist who has made his living explaining the emergence of mass culture and the increasing importance of social images as commodities - very much in the vein of the Situationists. To get a feel for the Baudrillardian "social-image-as-a-commodity," consider the term "spin doctor," listen to Michael Jackson's lawyers, or examine the difference between a television commercial and a PBS "pledge break." Baudrillard talks about the regression of simulacra, the media hall-of-mirrors in which any reference to the actual disappears. Mick Jagger talked about the same thing 20 years ago in the film *Performance*, only he was in a bubble bath with the still-attractive Anita Pallenberg and an underage androgynous French Girl. Baudrillard isn't that much fun, though he's the most popular Trendy Frenchman with the college crowd.



Security Clearance:

The distance between you and the floor after you learn how easy it is to use RSA.



\$290

make using the patented RSA Public Key Cryptosystem (and a host of other algorithms) easy.

More importantly, your developers have the full support of RSA's staff of experienced mathematicians, cryptographers and engineers. You'll have the industry's leading cryptography shop standing behind your development effort—just like we stand behind other BSAFE™ and TIPEM™ customers like Apple, Microsoft, Lotus and Sun.

Call RSA at 415.595.8782, or e-mail us at info@rsa.com. It could mean the difference between kicking up your heels or just kicking yourself.

RSA. Because some things are better left unread.®



Deleuze and Guattari

In their ongoing attack on the theories of Freud, Gilles Deleuze and Félix Guattari have proposed something called "schizoanalysis" as an alternative to psychoanalytic practice. They said, "A schizophrenic going for a walk is healthier than a neurotic on a couch," a philosophy that we find in practice on the streets of Berkeley, California. Scholars influenced by these two have recently raised the banner of cyberpunk science fiction, since the genre speaks directly to the schizoid character of techno/media life.

Derrida

Jacques Derrida is a philosopher concerned with the act of reading. He imagines the scholar as a kind of priest and sees criticism and analysis as religious ritual performed upon a text. This makes Derrida very popular among

Reading any of these French guys is exhausting, and it takes valuable time away from watching television advertising.

academics, who would otherwise feel *completely* irrelevant in our media apocalypse. Recently, even academics have described Derrida's thinking as out of date. Derrida's progeny however, such as the brilliant Avital Ronell, have made it their business to read *technology* and the meaning of techno-culture. The results are overwrought... but amusing.

Foucault

Michel Foucault explored and analyzed the political and bureaucratic aspects of control and punishment. He was among the first to recognize and define our emerging technocratic surveillance culture in terms of the "panopticon," a multitiered prison complex in which all activity is visible to the overseers. Poor Michel. He didn't know about anonymous remailers.

Kristeva

Julia Kristeva explores the place of the female in the patriarchy, or dominant social order. Like the American novelist Kathy Acker, she questions the whole idea of identity and asserts that the feminine has been marginalized and identified as Other. Other(ness) is a major buzzword in pomo feminist and minority discourse these

days. For instance, female sexuality, in Western European culture, is frequently portrayed as a mysterious commodity with an aura that can be easily transferred to an artifact and purchased by the consumer. Americans have vulgarized this exotic romanticism to the point of unintentional parody by associating, for instance, bad beer with buxom bimbos. The only mystery, finally, is how anyone can be that stupid.

Lytard

Jean François Lyotard looks at what he calls "narrative," the idea that through language we tell ourselves stories about life, stories that have an internal logic and structure. He compares this with *scientific* language, which sees itself as superior to narrative language because it requires "scientific proof." Lyotard shows how scientific language eventually becomes a self-validating narrative itself through philosophical and political consensus. Science tells itself that scientific thought will ultimately end in the emancipation of humanity through Progress. This, according to Lyotard, is a crock of shit.

Lacan

Jacques Lacan did for philosophy and language what The Residents did for music. The Residents placed a high value on obscurity. Lacan placed a high value on the difficulty people had understanding his language. If you're unfamiliar with The Residents, then this may be a Lacanian discourse of sorts. Lacan said things like "language points to a lack" which apparently means that if you're talking about it, you're not getting any. And you thought the French were always at it! Quoting Lacan might score you the most points in postmodern intellectual circles. The reason for this remains – of course – obscure.

Final thought

It might be argued that, taken as a whole, the Trendy French Philosophers have created a poetic and hyperbolic – if convoluted – rejection of late 20th-century capitalist techno-culture that offers little in the way of hope for that culture's transformation or defeat. On the other hand, they are sufficiently fascinated by that which they critique to pass long hours in coffee houses, basking in their negation. As such, they serve as a tremendous inspiration to America's techno-jaded slackers. ■ ■ ■

R.U. Sirius (rusirius@well.com) is co-founder of MONDO 2000. He wrote this with the expert help of Carmen Hermossa.

Look for Firewalls and Internet Security in these fine bookstores:

CALIFORNIA

Computer Literacy Bookshops
Cupertino, 408-973-9955 • San Jose, 408-435-1118
Sunnyvale, 408-730-9955 • info@clbooks.com
Micro Center
Tustin, 714-566-8500
Stacey's Professional Bookstore
Cupertino, 408-253-7521 • Palo Alto, 415-326-0681
San Francisco, 415-421-4687 • staceysbk@aol.com
Stanford Bookstore
Stanford, 800-533-2670

DISTRICT OF COLUMBIA

Reiter's Scientific & Professional Books
Washington, 800-537-4314 • books@reiters.com

ILLINOIS

Books & Bytes
Naperville, 800-541-2126 • order@byte.com
Borders Book Shop
Oak Brook, 708-574-0800

KANSAS

Borders Book Shop
Overland Park, 913-642-3642

KENTUCKY

Joseph-Beth Booksellers
Lexington, 606-273-2911

MASSACHUSETTS

Borders Book Shop
Framingham, (508) 875-2321
Harvard Coop
Cambridge, 800-368-1882
MIT Coop at Kendall
Cambridge, 617-499-3200 • msanders.eagle@mit.edu
Quantum Books
Cambridge, 617-494-5042 • quanbook@world.std.com
Softpro
Burlington, 617-273-2919 • softpro@world.std.com

MARYLAND

Borders Book Shop
N. Bethesda, 301-816-1067
Cucumber Information Services
Rockville, 800-223-8649 • orders@cucumber.com

MICHIGAN

Borders Book Shop
Ann Arbor, 313-668-7652 • Birmingham, 313-644-1515
Novi, 313-347-0780

NEW YORK

McGraw-Hill Bookstore
New York, 212-512-4100

OHIO

Joseph-Beth Booksellers
Cincinnati, 513-396-8960

PENNSYLVANIA

Quantum Books
Philadelphia, 215-222-0611
Univ. of Pennsylvania Bookstore
Philadelphia, 215-898-7520

TENNESSEE

Davis-Kidd Booksellers
Nashville, 615-385-2645 • Knoxville, 615-690-0136
Memphis, 901-683-9801

TEXAS

Brown Book Shop
Houston, 713-652-3937
University Coop Society
Austin, TX 78713
Majors Scientific Books
Houston, 800-221-9697 • Dallas, 214-631-4478
Taylor's Technical Books
Arlington, 817-277-1100 • Dallas, 214-934-1500

VIRGINIA

Borders Book Shop
Vienna, 703-556-7766
Computer Literacy Bookshops
Vienna, 703-734-7771 • sales@clbooks.com
Micro Center
Fairfax, 703-204-8400

WASHINGTON

Tower Books
Bellevue, 206-451-1110

NATIONWIDE

Barnes & Noble
Booksellers Since 1873

SOFTWARE ETC.

BOOKSTAR
The Complete Discount Bookstore

BOOKSTOP
The Complete Discount Bookstore

For more information call 1-800-822-6339

★ Addison-Wesley Publishing Company

Computer Books with an Edge...

This latest addition

to your professional

library is now available

from

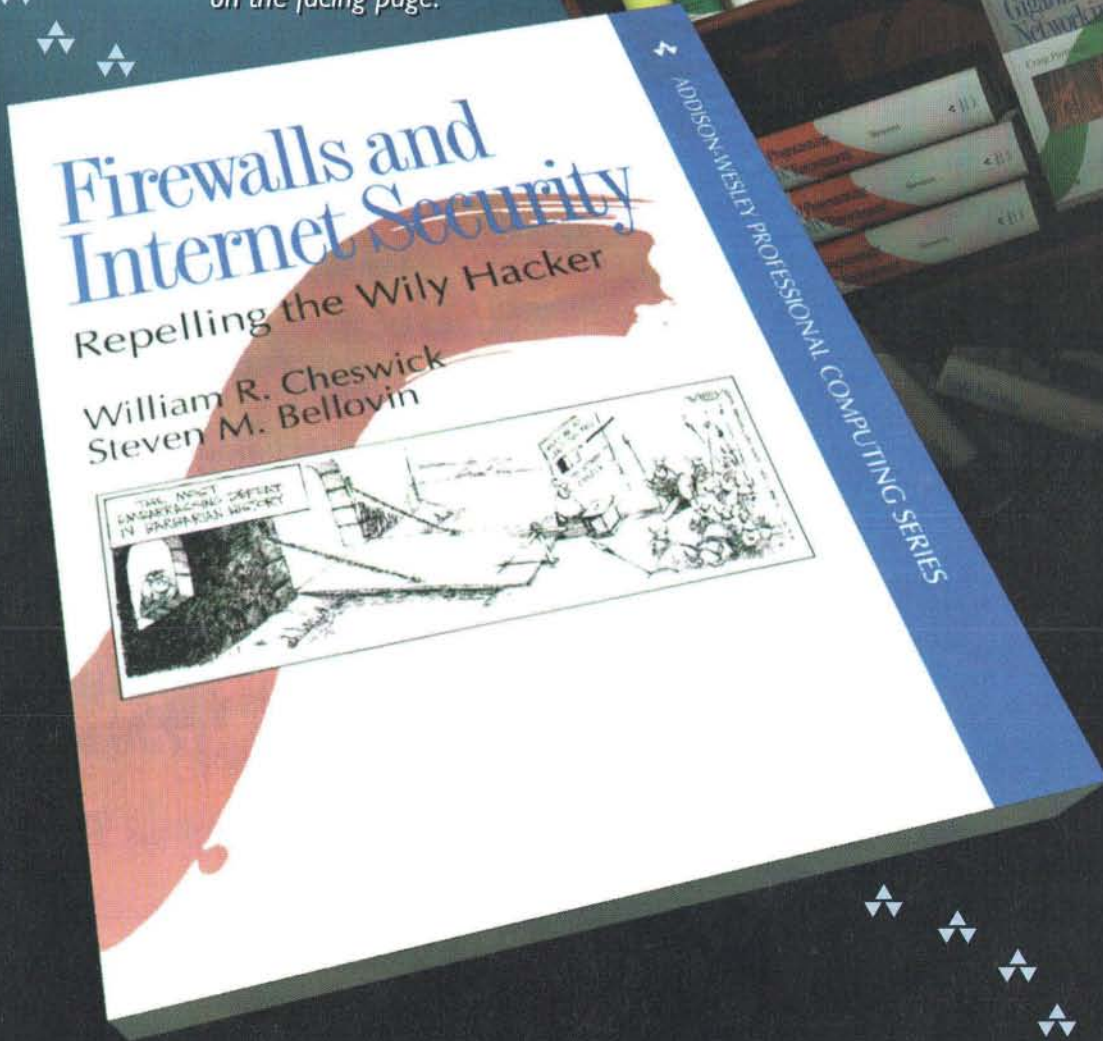
at technical bookstores

Addison-

including those listed

Wesley

on the facing page.



Don't be caught with your defenses down. Learn the techniques to keep your Internet connection secure — straight from the security gurus who have successfully kept all intruders from penetrating AT&T Bell Labs' Internet gateway.

The complete table of contents and preface for *Firewalls and Internet Security* are available via anonymous ftp at the Internet host `aw.com` in the directory `aw.prof.comp.series` (along with information on all of the other books in the Addison-Wesley Professional Computing Series).

Paperback • ISBN 0-201-63357-4 • 320 Pages

Wiring Africa

You go to a small village in Africa.

People are hungry.

Is the real solution 100 kilograms of corn –
or an electronic mailbox?

By Jeff Greenwald



Built on a fractal peninsula scratching the Atlantic, Dakar, Senegal, is a schizy, exciting, and often unnerving capital where French manners meet African funk. It's a city where you can have fresh croissants and *café au lait* for breakfast and *yassa thiof* for dinner; a place where Muslims spread their prayer mats out on the sidewalks at noon, and *burro-burros* – traditional “pharmacists” – hawk iguana

heads and monkey paws on blue plastic tarps. Blind beggars pace the sidewalks chanting verses from the Koran, while musicians like Youssou N'Dour and Baba Maal keep the nightclubs alive 'til dawn.

And Dakar is probably the only city in the world where, instead of a busy signal, you often get a scratchy Afro-pop recording,

backed by a cola-nut voice that, in melodic French, apologizes for your call's delay.

Yet, despite its hot link to the planet's endocrine system, Africa remains (electronically speaking) out in the cold. This fact is of considerable concern to Babacar Fall – a Senegalese journalist and communications specialist appointed by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) to revive the Pan African News Agency (PANA). If his efforts are successful, Fall may well go down in history as the Man Who Wired Africa.

Fall met me at PANA headquarters in Faan, a ritzy suburb where all the ambassadors sleep. At 42, Fall is a tall, intense man with almond eyes and a sparse, wiry beard. Having studied communications in Dakar and Montreal, he received a master's in political science at the Sorbonne. He's fluent in at least four languages and obviously well-read; a copy of Howard Rheingold's *The Virtual Community* sat on his office table.

The Pan African News Agency, Fall explained, was launched in 1979. Its mandate was to gather news at the

local and continental levels and distribute it among African nations as well as to the rest of the world.

“PANA sent its first dispatch off in '83,” he said, “but its success was short lived. Political interference badly compromised its credibility, and by 1987 the product could not be used.”

A financial crisis brought the situation to a head. In 1991, Senegal's state telecom system shut PANA down for persistent nonpayment of telephone bills. That same year, Fall – working as the head of UNESCO's African Communication Projects office in Paris – was asked to head a team of experts charged with developing the news agency's recovery plan.

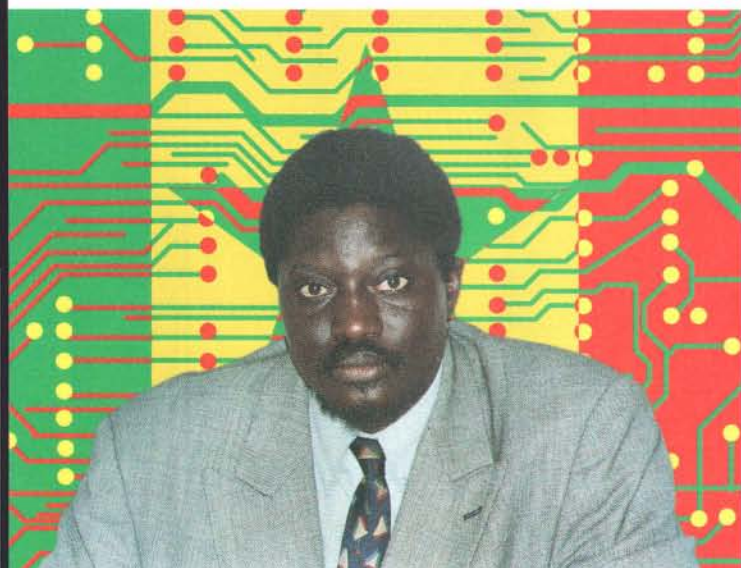
Fall's plan, submitted in April 1992, was based on three goals. The first two, editorial independence and privatization, are serious challenges that will determine, in the long run, whether the agency wins any measure of professional credibility. But the third goal – the nitty-gritty problem of bringing PANA online with state-of-the-art local and international telecommunications – has been an even tougher nut to crack.

“Forty-eight out of 52 African nations now belong to PANA,” Fall declared (the four that don't are South Africa, Namibia, Morocco, and Eritrea). “Most of them are using radio transmitting stations, which are totally dependent on the weather. Tropical storms and sandstorms can totally screw up transmission,” Fall said.

Bad lines are the main problem bedeviling PANA in its attempt to become a credible electronic media source. “It can take three, five, even ten attempts to reach another African country by phone,” Fall said. “It can take an entire day. And even where good telephone lines are available, the price is often prohibitively expensive.” Telecom in Africa is so bad, in fact, that some stations still have to rely on the telegraph, dinosaur systems that cost US\$22,000 a year and transmit at the rate of – hold on to your hat – 50 baud.

One of the main reasons for this primitive state of affairs is that the major news networks tend to ignore Africa. It's black, it's Muslim, and, except for stories about South African turmoil, civil wars, or natural disasters, it remains something of a blind spot in the Western eye. In this day and age such media invisibility is the ultimate impediment to progress, perpetuating Africa's long exile on the fringes of the world community.

Fall's solution involves dishes and digits. To begin with, the main agencies in Africa will be linked through a Very



“When you have news, it burns your hands. You've got to get it online very, very quickly, because it is news. So we want more than just a link; we want to be the electronic center for all of African media.”
– Babacar Fall



BAM!

BAM! Software, Inc. Our mission is to craft a better multimedia experience for our clients and end users — one that moves beyond canned video and dull interfaces — by dedicating ourselves to higher standards of design, production and engineering.

Services BAM! offers unique and synergistic expertise in all areas of product development, including audio, video, engineering, interface design, graphic arts, and editorial services. As a basic service, our Digital LaundrySM converts analog sources into a variety of digital formats.

Solutions From concept to delivery, our team will work with you to solve your multimedia problems. Draw upon BAM!'s broad experience in creating software to ensure innovative, compelling products.

Call or write for more information about what we can do for your next project.

BAM! Software, Inc.
81 Franklin Street, New York NY 10013
voice 1.212.343.9066
fax 1.212.343.2962

Take Your PC On the Road

ELECTROSPHERE



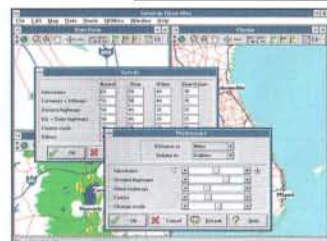
Click
To start your journey. Choose from over 120,000 cities.



Click
For your destination time and place. Make up to four stops along the way.



Click
For your driving style. From lead foot to laid back, freeways or county roads.



Click
For the best routes. In seconds, the quickest, shortest and best alternatives.



Go!
Your personal driving guide. Maps and directions to guide you in your journey.

Time	Instruction	Route	Time	Time	Time
10:00	Depart Portland City on the	10 miles	10	10:10	10
10:10	At Vancouver City on the	10 miles	10	10:20	10
10:20	At Woodland City on the	10 miles	10	10:30	10
10:30	At Salem City on the	10 miles	10	10:40	10
10:40	At Corvallis City on the	10 miles	10	10:50	10
10:50	At Astoria City on the	10 miles	10	11:00	10
11:00	At Clatskanie City on the	10 miles	10	11:10	10
11:10	At Seaside City on the	10 miles	10	11:20	10
11:20	At Cannon Beach City on the	10 miles	10	11:30	10
11:30	At Gearhart City on the	10 miles	10	11:40	10
11:40	At Cannon Beach City on the	10 miles	10	11:50	10
11:50	At Cannon Beach City on the	10 miles	10	12:00	10
12:00	At Cannon Beach City on the	10 miles	10	12:10	10
12:10	At Cannon Beach City on the	10 miles	10	12:20	10
12:20	At Cannon Beach City on the	10 miles	10	12:30	10
12:30	At Cannon Beach City on the	10 miles	10	12:40	10
12:40	At Cannon Beach City on the	10 miles	10	12:50	10
12:50	At Cannon Beach City on the	10 miles	10	13:00	10
13:00	At Cannon Beach City on the	10 miles	10	13:10	10
13:10	At Cannon Beach City on the	10 miles	10	13:20	10
13:20	At Cannon Beach City on the	10 miles	10	13:30	10
13:30	At Cannon Beach City on the	10 miles	10	13:40	10
13:40	At Cannon Beach City on the	10 miles	10	13:50	10
13:50	At Cannon Beach City on the	10 miles	10	14:00	10
14:00	At Cannon Beach City on the	10 miles	10	14:10	10
14:10	At Cannon Beach City on the	10 miles	10	14:20	10
14:20	At Cannon Beach City on the	10 miles	10	14:30	10
14:30	At Cannon Beach City on the	10 miles	10	14:40	10
14:40	At Cannon Beach City on the	10 miles	10	14:50	10
14:50	At Cannon Beach City on the	10 miles	10	15:00	10

AUTOMAP®
Call today to order
1-800-440-MAPS
or visit your local
software store



Automap Road Atlas (DOS or Win or Mac)\$99.95 \$59.95
Automap Road Atlas (CD Version-Win)\$99.95 \$59.95
Automap Road Atlas Upgrades (DOS or Win)\$39.95 \$29.95
Automap Destination Europe (add-on)\$49.95 \$39.95

Payment by VISA, MasterCard, or Check. Add \$5.50 shipping and handling. WA residents add 8.2%, CA residents add 8.5%.

Automap Inc. Monday-Friday 8:30 am to 5:00 pm, 1309 114th Ave. SE, Suite 110, Bellevue, WA 98004. Fax: (206) 455-3667

Requirements: Hard drive with 5 1/2 MB free. **Windows version:** Windows 3.0 or above in standard or enhanced mode. **DOS version:** DOS 3.0 or above, 640K RAM. **Destination Series add-ons:** Work with DOS or Windows versions of Automap Road Atlas. **Mac version:** Macintosh Classic II & up, or a Powerbook 140 & up. Does not run on Macintosh Plus, SE or original 128K or 512K Macintosh. Superdrive. System 6.0.7 or above, System 7 friendly.

© Copyright 1988-93, NextBase Ltd. Automap is a registered trademark of NextBase Ltd.

Small Aperture satellite Terminal (VSAT) system. That process ought to happen by the end of the year and will immediately cut PANA's telecom costs in half. "But to gather and collect information from all the bureaus," he pointed out, "and to transmit them worldwide, we need a two-way link. We need the Internet."

Fall's dream of a wired Africa was realized partially on February 18, when ORSTROM, a Dakar-based French research company provided PANA with a basic Internet link. It's cheap, and it's a start, but the hookup - which comes only five times a day - isn't enough for Fall.

"When you have news, it burns your hands. You've got to get it online very, very quickly, because it is news. So we want more than just a

advanced, is the dismal state of African communications.

"You can't treat people like cattle," he stated imperatively. "You have to convince them - which means you have to communicate with them. For twenty years, the priorities for development in Africa have included agriculture, health, and the environment. Yes. But none of these can succeed if there's no communication. You can't develop agriculture if you can't have a dialogue with the farmers in rural areas. You can't improve health if people aren't informed about major epidemics like AIDS. You can't protect the environment if you can't communicate with the people who are placing it in danger. The industrial countries have spent bil-

"For twenty years, the priorities for development in Africa have included agriculture, health, and the environment. Yes. But none can succeed if there's no communication. You can't develop agriculture if you can't have a dialogue with the farmers...."

link; we want to be the electronic center for all of African media. We want to become an Internet node."

Such ambitions cost money, but Fall reckons the agency's volume of news will soon be able to support the expense. His convictions were echoed by Amadou Mahtar Ba, PANA's marketing assistant, who claims that over 300 black media sources and African-American support organizations - in the US and the Caribbean alone - are ready and waiting for the Pan African News Agency's input.

Babacar Fall's grandest plans for PANA hinge, of course, on a quantum leap in African telecommunications systems - a reality that he projects (at least for the major cities) within the next few years.

"We can leapfrog," he pointed out. "Africa doesn't have to go from drums to telegraphs to telex. We can go right to satellites, electronic media, and a computerized newsroom."

Fall sees PANA's node as the first step in an Africa-wide network that will stretch from Algeria to Zimbabwe - providing a lot more than the latest World Cup scores. Fall's vision of a wired Africa, in fact, has less to do with late-breaking news than with the more complex issue of Pan-African development. It's well known that aid projects on the continent have a history of expensive failure; the reason, Fall

lions of dollars trying to develop agriculture, change health conditions, and fight problems like pollution and desertification. Nearly all these programs have failed. Finally, we understand why: There is no way to develop a country if the people cannot participate."

Fall peered into his empty teacup as if reading the leaves. Then he made a revolutionary declaration.

"For years," he said, "the main obstacle to real development has been the statement, 'We have to feed the people first.' After all, who can withhold food? But if you want the people to feed themselves, you have to have a different view." He gave me an appraising look. "Say you go to a small village. People are hungry. Is the priority an electronic mailbox... or 100 kilograms of corn?"

I said nothing. Fall nodded his head.

"What we've learned, over the past twenty years, is that the mailbox may well be the priority."

Contact the Pan African News Agency: PANA, PO Box 4056, Dakar, Senegal, +(221) 24 13 95 or +(221) 24 14 10, (baam@pana.pana.sn). ■ ■ ■

Jeff Greenwald is a contributing editor for Wired. This is one of the first news stories ever filed on the Internet from the PANA headquarters in Dakar.

LANGUAGE



VISION



SOUND



We don't have to tell you about the importance of electronic communication, or the need to transmit and receive ideas effectively. You should be able to get any idea anywhere on Earth, simply and easily. But ideas can take many forms...it often takes more than just text to communicate. A picture may be worth 1,000 words, but only if someone can see it.

Too many e-mail systems inhibit the content of messages and limit the potential audience. Z-Mail is the only standards-based, cross-platform electronic mail system specifically designed to communicate your ideas as you intend them. You can send text, images, spreadsheets, and even video — from almost any platform to any other.

The free exchange of ideas, no matter what the content, in any format, among everyone, everywhere.

Z-Mail.



Z-Code Software Corporation

101 Rowland Way, Suite 300, Novato, CA 94945

Tel: (415) 898-8649 Fax: (415) 898-8299

E-Mail: info@z-code.com

Turf Wars

In the second part of his two-part series, Bob Johnstone uncovers the bureaucratic infighting behind Japan's failure to create its own coherent information infrastructure strategy.



Outside the station in the small Tokyo Bay town where I live are two of the most sophisticated public telephones in the world. Encased in cool gray plastic, the phones feature on-hook dialing, volume controls, and LCD screens that give instructions on how to make international calls – in English as well as Japanese. Most beguiling of all are the two jacks near the bottom of the phones, which can accept both analog and digital input from a personal computer.

What I often wonder is, for whom are these phones intended? Almost the only people who ever use them are *salarimen*

Mainichi newspaper writes, “the issue of how the communications circuits should be used is being completely ignored.”

Though nominally a Western-style democracy, Japan is actually run by bureaucrats, not politicians. Japanese bureaucrats are selected on merit from among graduates of top universities. These are the ultimate products of what is probably the most competitive education system in the world. They bring their razor-sharp competitive instincts to their new positions. But whom to compete against? Why, bureaucrats at other ministries, of course. “Young bureaucrats are like *yakuza*,” comments one government source, referring to the Japanese mafia. “They develop muscles by fighting against each other – that’s the style of their society.”

Japan’s rulers inhabit a cluster of office buildings in Tokyo’s central Kasumigaseki district, just down the hill from the Diet (parliament) building and across the moat from the Imperial Palace, where Emperor Akihito lives in splendid isolation. Dominating the cluster is a thirteen-story tower that houses the notorious MITI, the Ministry of International Trade and Industry. For ambitious young bureaucrats, International Trade and Industry used to be the ministry of choice. But the ministry’s glory days – when it had control over allocation of precious foreign exchange, hence the power to decide who could import what – are long gone.

Today, pride of place goes to the bean counters at the Ministry of Finance, whose stronghold is the undistinguished squat gray building across the road. To MITI’s right is its archrival, the Ministry of Posts and Telecommunications. Prominently displayed in the lobby of the Posts and Telecommunications building are demos of the various unsuccessful projects that the ministry has promoted over the past decade. In addition to narrowband ISDN, these include Captain, a teletext system that, unlike the French Minitel, never found a popular application; CATV, as cable television is called in Japan, which until very recently has been too tightly bound in red tape to grow; satellite TV, which has been hobbled by the high cost of transponders (Posts and Telecommunications permit required); and Hi-Vision, Japan’s obsolete version of high-definition television, which sputters on in the form of eight-hour daily broadcasts on one channel that are unwatched by all but a tiny minority (see related story on page 68).

Over the way from the Ministry of Posts and Telecommunications is the Ministry of Education, Science, and Culture (Mombusho), which sets the national school curriculum and administers Japan’s universities. Mombusho bureaucrats

“Young bureaucrats are like *yakuza*,” according to one government source: “They develop muscles by fighting against each other.”

calling their wives to come and pick them up late at night. In the past year or so, Integrated Service Digital Network (ISDN) phones have sprung up all over the Tokyo area. The joke is that the only people who ever jack into them are visiting American engineers who cannot resist the opportunity to log onto the Net remotely from a public phone (and have their photo taken doing it). But even they only use the analog jack.

ISDN phones are symbolic of the way things are done in Japan. Government bureaucrats decided that the public needed digital phones, so we got digital phones, with little thought given to how we would use them. Positioned as an extension of the traditional phone system, Japan’s narrowband (64Kbps over copper) ISDN has been a commercial flop, having attracted fewer than 200,000 subscribers in the six years since the service went into operation.

Today, the Japanese are debating the construction of a much more ambitious broadband digital network that is intended to lay optical fiber to every home and office in the country. But again, as commentator Kazuhisa Maeno of the



Rare First Issue of Wired – Free!

You can't buy the first issue of *Wired* from us,
but you can get it free through Wired Online.

live in a brown brick doughnut of a building which, to judge by its art deco flourishes, was built before World War II. This is entirely appropriate, since the education ministry spends much of its time making decisions about how unsavory incidents involving the Imperial Japanese Army during World War II – most notably the Rape of Nanking – are presented, or not presented, in history textbooks. MITI may have its visionaries and radicals, but the Mombusho is dominated by conservatives who guard their prerogatives with particular zeal.

The education ministry discourages fraternization between its vassals – university faculty, for example – and researchers at institutes run by other ministries, let alone their corporate counterparts. The Mombusho has the power to punish those that disobey it by cutting off their funding. Its goal is to maintain as much control as possible over the university nodes of Japan's computer network. The funny thing is, the ministry's bureaucrats seem to have little idea what networks are used for. "Even when we explain it to them, they still don't understand," laments Haruhisa Ishida, of the University of Tokyo's Computer Centre, who is secretary of the Japanese branch of the Internet Society.

Nor is the situation any different at the other ministries which see networking as their business. Only one of the half-dozen bureaucrats interviewed for this article (a MITI man, naturally) had an e-mail address, and even that was at a research institute, not at the ministry itself.

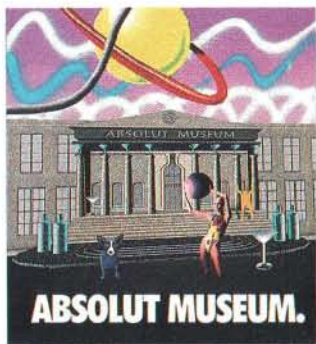
Nonetheless, when Vice President Al Gore presented his National Information Infrastructure proposal to Congress, Japanese bureaucrats were quick to formulate a response. Their opportunity came in the form of a ¥1.3 trillion (US\$13 billion) supplementary budget announced in mid-1993 by Japan's government. This money was intended to stimulate Japan's sluggish economy. Some 10 percent of it was earmarked for "new social infrastructure," a vague phrase that could be understood to mean information superhighways. Certainly, that was how MITI chose to interpret it, proposing the construction of a nationwide network of optical fiber to the home.

The gambit by MITI stung the Ministry of Posts and Telecommunications into rushing out a counterproposal. In the old days, the boundaries between the two ministries were well demarcated: MITI looked after computers, while the Ministry of Posts and Telecommunications took charge of communications. The arrangement worked well so long as computers were stand-alone devices, but the coming of

- ▶ Access the *Wired* Knowledge Base, the full text of all issues of *Wired* from the first – as well as the complete Clipper file (send e-mail to infodroid@wired.com, including the words "get clipper/index" in the message body) with John Perry Barlow's incendiary "Jackboots on the Infobahn," as well as the full story of *Wired's* banning in Canada (send e-mail to infodroid@wired.com, include the words "get homolka/index" in the message body). You can find it free at Wired Online.
- ▶ Discover stories not included in the print version of *Wired*.
- ▶ Discuss articles and issues with contributors.
- ▶ Connect with the community of *Wired* readers.
- ▶ Stay informed about *Wired*.

Get Wired Online: The Out-of-Magazine Experience

Service	Where's Wired?	Getting there (online)	Contact (human)
▶ Wired on WWW	point your WWW client http://www.wired.com Home Page	check out Wired's "Rest Stop on the Infobahn"	Wired Online +1 (415) 904 0662
▶ hotWired Mailing List	send e-mail to infodroid@wired.com	include the words "subscribe hotwired" in the message (body)	Wired Online +1 (415) 904 0662
Wired Infodroid (e-mail server)	send e-mail to infodroid@wired.com	include the words "get index" in the message (body)	Wired Online +1 (415) 904 0662
Wired Gopher	gopher.wired.com	gopher to: wired.com port 70	Wired Online +1 (415) 904 0662
America Online	Newsstand, Internet Center areas	keyword: WIRED	America Online +1 (800) 827 6364
OneNet	vendor forums	select the Wired Magazine icon	OneNet Los Altos +1 (415) 948 4775
MindVox	Cyber Space Area; WIRED Forum	dial +1 (212) 989 4141 or telnet phantom.com ; type "read" in Main Menu; then type "go wired"	MindVox +1 (212) 989 2439
USENET	alt.wired	your favorite news reader software	(contact your local Netnews provider)
the WELL	WIRED conference	dial +1 (415) 332 6106 or telnet well.sf.ca.us ; then type "g wired"	the WELL +1 (415) 332 4335



Now, your favorite Absolut Vodka advertisements are together in a totally unique 3-D computer program, Absolut Museum.

The "virtual" hallways of Absolut Museum contain the images of over 200 photographs, paintings and fashion designs from the award-winning Absolut Vodka advertising campaign.

Walk through the main hallway and see the first Absolut Vodka advertisement, Absolut Perfection, or cross into Absolut Glasnost featuring the work of 26 talented Russian artists. And with the click of the mouse, find out what other surprises are waiting for you. Whether you're a fan of Absolut advertising or a computer guru, Absolut Museum will entertain you for hours.

To order the 3 disc Absolut Museum package for \$29.95, please call:

1-800-94-ABSOLUT

Visa and Mastercard accepted. Please allow 6-8 weeks for delivery.

As a further bonus, CompuServe subscribers can type GO ABSOLUT to view and save Absolut Vodka ads, download a free sample of Absolut Museum and order the complete Absolut Museum package electronically.

No matter how you order Absolut Museum, you'll also be supporting the fight against AIDS. All net proceeds go to the American Foundation for AIDS Research (AmFAR), a leading national organization funding research to find a cure for AIDS. So order while supplies last.



System requirements - IBM compatible (80386 or faster) with a minimum of 1MB of RAM and 9MB storage space.

networking has given MITI the perfect excuse to poach on Ministry of Posts and Telecommunications territory. (A second blow to the Ministry of Posts and Telecommunications was the loss of control over Nippon Telegraph and Telephone Corp. (NTT) following the partial privatization of the giant corporation in 1985.)

Posts and Telecommunications bureaucrats saw new social infrastructure as a chance to regain some lost ground. They argued that, since the US government was committed to providing fiber to the home, Japan should embark on a similar project in order not to be left behind. (This, as several Japanese commentators have pointed out, was "a deliberate misunderstanding," the Clinton-Gore administra-

Posts and Telecommunications bureaucrats saw the building of a new social infrastructure as a chance to regain some of their lost ground.



tion's intention being to stimulate the construction of a nationwide network, not to lay the fiber itself.) The bureaucrats proposed that construction of the network should be entrusted to a new public corporation which would, of course, be managed by the Ministry of Posts and Telecommunications.

At this point, NTT threw its hat into the ring, announcing that it could handle building the network. Bringing fiber to every home would take twenty years and cost ¥41 trillion (US\$400 billion), but the corporation could do it. Where would the money come from? From raising the price of local phone calls, the corporation answered, bringing up an increase for which it has long lobbied the Ministry of Posts and Telecommunications. The Ministry of Finance, the ultimate arbiter in the debate, is known to favor NTT's plan, not least because the Ministry of Finance wants the corporation's stock price to rise so it can sell off the 66 percent of NTT shares that the government still holds.

As it makes the difficult transition from public corporation to full-fledged private company, NTT has begun to slough off its old, bureaucratic ways. In the past, says Kaoru Kubo, vice president in charge of NTT's strategy planning office, NTT would present its customers with a network interface and tell them to adapt their systems accordingly. These days, Kubo says, "The world is changing. De facto standards like PC, video, and TCP/IP were not determined by

network vendors." The lesson, he adds, is that "we have to change our attitude. These different guys tell us what they require, then it is up to us to try and accommodate them."

This customer-friendly attitude is coupled with a newfound aggressiveness in forming alliances with partners to develop multimedia services. In March, NTT announced that it would join Tokyo-based software publisher Softbank in a venture to provide video on demand over the telephone company's data communication lines. The same month, NTT president Masashi Kojima shocked local firms by appearing on the same platform with Microsoft Chairman Bill Gates to announce that the two firms would work together to develop mul-

timedia-related services. Earlier in the year, the corporation had demonstrated its recognition of US superiority in communications software by joining the General Magic alliance.

What NTT would like to see most of all now is deregulation, especially in Japan's archaic tariff system. When the corporation wants to introduce a new service, it must figure out how much it would cost to implement the system nationwide, then charge accordingly. Not surprisingly, the result is high costs for everybody. This is particularly true in the case of leased lines, the sine qua non of networking, where costs range anywhere from five to eight times as much as in the US. But since Japan's new common carriers - DDI Corp., Japan Telecom, and Teleway Japan, the local equivalents of Sprint and MCI - depend on leased-line sales for much of their revenue, the Ministry of Posts and Telecommunications is reluctant to let NTT drop its prices too much.

At the same time, a challenge to NTT's assumption that it will have sole charge of creating Japan's information infrastructure has emerged in the shape of a heavyweight alliance called Tokyo Telecommunication Network Co. Among partners in this grouping is Tokyo Electric Power Co., which for several years has been quietly laying a fiber network alongside its power transmission lines. Though it has yet to begin trials of interactive services, Tokyo Telecommunication Network is already talking of hooking

VOCABULARY ENHANCEMENT



POLITICAL CORRECTNESS



SPIRITUAL AWARENESS



BUTT-KICKING EXCITEMENT



Jump Raven™



Grand Prize Winner: The Apple-Japan CD-ROM Award

Chosen over IRON HELIX, HELL CAB, and MYST.

"Downright outrageous."

- Inside MacGames

Welcome to the future. America's on close-out sale. Everything's going to hell on afterburners. The Skins and the Neos have stolen the last gene samples of Earth's wildlife. If you ever want to hear a bird go tweet again, you'll have to do something *fast*.

Fire up your hovercraft and

blast through an incredibly realistic, grungy 3-D New York-of-the-future in a non-stop firefight.

Your hand-picked co-pilot is screaming with attitude. Your custom-chosen soundtrack is turning your brain to plasma.



world... and make a few bucks while you're at it.

🍏🍏🍏🍏 1/2

- MacHome Journal

The Weapons Lady has 24 different forms of destruction for your selection...if you can handle it.

All you've got to do is stay alive long enough to save the



**FROM THE
AWARD-WINNING
CREATORS OF
LUNICUS™**

*Inquiries please call
415-813-8040*

AWARD-WINNING CD-ROM MACINTOSH ADVENTURE NOW AVAILABLE FOR WINDOWS



Paramount Interactive

[*Hillary not included.]

SimHealth gives you everything you need to re-make the American health care system—except the First Lady.

A unique new simulation software created by Maxis and brought to you by the Markle Foundation, SimHealth elects you leader. Now you can build a health policy in tune with your values, and watch it in action on a virtual "Main Street." Will you be re-elected? You'll certainly be more engaged, entertained and educated about our national debate than you ever thought possible. So why not give us a call? Because at \$29.95—that's 25% off retail—and in a new, easy-to-install, 16-color version, SimHealth is just what the doctor ordered.



1-800-U-CHANGE
1-800-824-2643



Mail orders:

SimHealth, PO Box 2096, Woodinville, WA 98072-2096
Add \$6 for shipping and handling. NY and WA residents, please add applicable sales tax. Requires an IBM or 100% compatible with DOS, a 386 microprocessor or greater, and a 16-color monitor.

Everybody, including the Ministry of Posts and Telecommunications, knows that Hi-Vision—Japan's hybrid analog HDTV standard—is dead as a dodo. But when in late February Akimasa Egawa, director general of the ministry's broadcasting bureau, admitted as much, he sparked outrage from broadcasters and equipment makers alike.

Egawa said the Ministry of Posts and Telecommunications was considering

shifting its support from Hi-Vision to an all-digital system like the one proposed in the US. In Japan, it is customary before announcing such a radical policy shift to make the rounds of concerned parties to explain your position. In this case, however, the announcement came out of the blue. The bureaucrats evidently concluded that shock treatment was the only way to deal with the recalcitrant firms.

Egawa's bluntness backfired on him. A storm of protest blew in from senior executives at Sony and other leading Japanese electronics companies. After all, they wanted to know, was it not under guidance from the ministry that they had adopted the standard in the first place? The hapless bureaucrat was forced to eat his own words. It now looks as if Hi-Vision will be allowed to limp on into obscurity.

A second Ministry of Posts and Telecommunications initiative, the deregulation of cable television, has been more favorably received. Not that the bureaucrats are in favor of deregulation in principle, mind you. Rather, the criticism blaming their restrictive policies for Japan's backwardness in advanced communications had grown

too loud to ignore any longer. At the end of 1993, the ministry agreed to allow up to 33 percent foreign ownership in cable TV firms. Then in April, the Ministry of Posts and Telecommunications indicated that it would permit cable operators in different areas to connect to each other.

(Government restrictions on the size of the areas that cable companies can serve have been a major factor in preventing firms from

The Posts and Telecommunications Ministry admits defeat. Twice.

achieving sufficient economies of scale to operate at a profit. Lack of capital has in turn prevented cable companies from expanding, with the result that today only about 3 percent of Japanese homes are wired for cable versus 63 percent in the US.)

Several powerful corporate groups are gearing up to get serious about providing cable to the Japanese domestic market. Typically, these cluster around a giant trading company, with a US partner providing operating expertise and programming and a Japanese affiliate supplying hardware. One such affiliate is Itochu, which has reportedly teamed up with Time Warner, US West, and Toshiba; others possibly involving US giant TCI, are in the works.

Still more deregulation is in the works. The Ministry of Posts and Telecommunications is currently conducting a sweeping review of laws and policies affecting communications and broadcasting. These are currently administered by separate fiefs within the ministry. But bowing to the march of digital technology, the bureaucrats are likely to recommend that in the future a single set of regulations will suffice for both.

up with regional power companies and cable operators throughout Japan to form a nation-wide network.

Meanwhile, back in Kasumigaseki, the turf war for control over construction of the next-generation network rages on. Thus far, all that has been agreed upon is the construction over the next three years, at a cost of ¥4.1 trillion to ¥5.2 trillion (US\$40 million to \$50 million), of a new, interministerial 6Mbps fiber network connecting 50 or 60 government research laboratories. Responsibility for running this network nominally belongs to the Science and Technology Agency. But the agency is a lesser player in Japan's great bureaucratic game, and has little practical experience with networks and few qualified personnel. Behind the scenes, the National Center for Science Information Systems, an institute belonging to the education ministry, is maneuvering to gain control.

But in the heat of battle, the bureaucrats appear to have lost sight of what matters most. That is, the creation of new services and the development of applications. "If you look at the US National Information Infrastructure initiative," NTT's Kubo says, "in addition to conduit, the government also gave budget for libraries, universities, and medical centers - to promote the development of applications and to encourage the spread of online databases to give people easy access. But the Ministry of Posts and Telecommunications doesn't understand - they ignore this kind of key issue."

The Japanese are acutely aware of the problems caused by an unaccountable bureaucracy that puts the short-term interests of individual ministries ahead of those of the nation. Bringing the bureaucrats back into line was a high priority of the reformist government led, until April, by Morihiro Hosokawa, though success ultimately eluded him. A major problem is that many of the government's new representatives are still wet behind the ears, and even senior coalition politicians have no previous government experience. So, paradoxically, the effect of the new government has been to strengthen the hand of the bureaucrats. Japanese politicians appear to know even less about networking than Japanese bureaucrats. There used to be one Diet member who used a computer bulletin board to communicate with his constituents. Unfortunately, he lost his seat in the last election. And it is doubtful whether even he jacked into an ISDN phone. ■ ■ ■

Bob Johnstone (bobjohnstone@twics.com)
wrote "Wiring Japan" for Wired 2.02.

Internet

Multi-Player Games

Worldwide Chat Lines

FREE TRIAL

Sign-up for our 4 or 8 hour plan and we'll waive your first month's subscription fee.
Limited time only!

And the lowest national online rates going.



A SERVICE OF
U.S. Videotel™

How to get online:

Call our Client Services department at 1-800-336-9096. (In Houston, call 877-4444.) Or register online using any comm software set at N-8-1 and full duplex. Dial by modem 1-800-336-9092. When connected enter WT94IN and press <return>.

Call 1-800-336-9096.

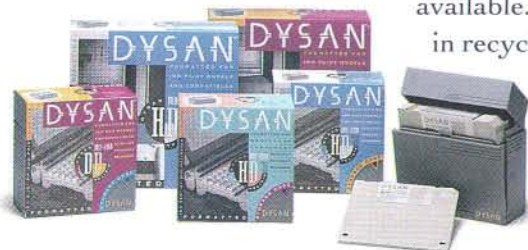
Write to us on the Internet: info@nvn.com



COUNT ON US FOR FLIGHT INSURANCE.

GET SMART. GET DYSAN. For today's highly-mobile professionals, all the insurance in the world can't prevent accidents which can cause you to lose your data. That's why the more you travel, the more you need to backup your data on Dysan diskettes.

Dysan 3.5" and 5.25" floppy diskettes provide the most reliable, virus-free, certified backup available. Plus, they come formatted to save you time, and are packaged in recyclable plastic cases for safe, organized storage.



The next time you travel, take off with the only data backup that's guaranteed to perform—and guaranteed for life. Ask for Dysan diskettes at your favorite computer store, and insure a happy landing on your next business trip.

SAVE THE THINGS THAT MATTER MOST.™ **DYSAN™**

Bad Attitude: Business as Usual on the Infobahn

By James Cappio

There's about as much chance of a many-to-many network built out of "enlightened self-interest" as there is that the Clinton administration will willingly abandon the Clipper standard.

Sleeping better at night knowing that Bill Clinton is your president? No more bolting upright in bed, feebly clawing at sweat-stained sheets, waking from scraps of fevered dreams in which the Republicans are re-elected and our information technology policy is set by a man who doesn't know a UPC scanner when he sees one? Don't go back to sleep just yet: If the trend in federal information policy that emerged in Vice President Al Gore's January 1994 speech at the University of California at Los Angeles

continues, the National Information Infrastructure (NII) will be less like the most revolutionary advance in technology since Gutenberg and more like — well, Prodigy.

The vice president's UCLA speech, like other Clinton administration information policy pronouncements, set forth five objectives for a federal information policy. None are concrete enough for anybody to oppose. But when government and industry announce an "emerging national consensus" in favor of apple pie, they are more likely to deliver a mouthful of Ritz crackers; why would the recipe offered by the vice president be an exception?

The NII would scarcely be worth building if it offered no more than 500 channels of MTV, no matter how holographic, ambient, and jacked in to the gills. Its real payoff, its visionary promise, would be the possibility of an "Athens without slaves" or a "Jeffersonian democracy" in which people can provide information as easily as they consume it. A networked world offers the possibility of many-to-many communication, permitting widely separated individuals to bind themselves into collectives.

The vice president seemed to embrace this vision in a December 1993 speech at the National Press Club when he promised that "each person will turn from being just a consumer to being a consumer and a provider." But as we've seen at UCLA, such language has a ring more of rhetoric than reality. True many-to-many capability, an inevitability in December, was demoted to a project for future research by January, when Gore said: "We must also explore the future of noncommercial broadcasting."

But what about that nascent national many-to-many network, the Internet? It's under siege. Mitch Kapor, who has called for the privatization of the Internet since at least 1991,

acknowledges that free expression by individuals requires government protection in a privatized Internet. But if the private communications industry cannot be trusted on its own to preserve many-to-many connections that already exist, how likely is it to ensure that such connections will be built into the NII?

In his manifesto in *Wired* 1.3 ("Where Is the Digital Highway Really Heading?" page 53), Kapor can only offer the hope that a "logic of self-interest" will lead the cable and telephone companies to "permit the greatest diversity of content and services." The problem isn't so much Kapor's Panglossian faith in an invisible hand that will mesh public good with corporate objectives, but his assumption that the "enlightened self-interest" in question is profit. Diversity will maximize profit only by assuring the largest possible customer base. Since when does mass appeal mean the flourishing of free, autonomous, yet interdependent individuals that is the hallmark of a "Jeffersonian democracy"?

In his National Press Club speech, the vice president was closer to the truth: "We'll turn from consumers into providers. In a way, this change represents a kind of empowerment." Certainly, access to networks such as the NII is the power issue of our time. Unfortunately, the vice president went on to liken individuals under the "communications revolution" to mere instrumental sources of informational "added value" to the economy, like factory workers. That's precisely the wrong analogy if networks are to form the basis of an electronic "Jeffersonian democracy." The Industrial Revolution took power out of factory workers' hands, depriving them of control over their own production by the particular way it harnessed the division of labor. Adam Smith's workers, who specialized in making pin heads or pin shafts, had no control over their ultimate assembly and disposition.

The real significance of the Information Revolution is that a worldwide network centered on true many-to-many communication is our first chance since the Industrial Revolution to take large-scale power back into our own hands. Consider the forces that will actually build the NII. If, as the existence of a true many-to-many world network implies, everybody has the power to make artistic products of any kind and to distribute them to anybody on the planet essentially for the asking, the need for an entertainment industry suddenly disappears. Because the issue is power — the precondition of profit — there's about as much chance that the communications industry will build a many-to-many network out of "enlight-

ened self-interest" as there is that the Clinton administration will willingly abandon the Clipper encryption standard. Ignoring poet Audre Lorde's admonition that the master's tools will never dismantle the master's house, Kapor trusts that the master will hand over the tools.

One historical example might seem to offer grounds for optimism. The telephone is interactive and has a fair (though not perfect) claim to universal access. But its universality did not arise from the competitive private pursuit of self-interest. Early in the century, AT&T gained dominance by first creating and monopolizing the market for long lines and then using that control to eliminate its regional competitors. Even so, it only provided universal service because of the profound personal democratic beliefs of its president, Theodore Vail.

The AT&T example also helps show that universal access, a Clinton administration promise, doesn't guarantee many-to-many interactivity. The telephone is one-to-one; people use it to produce and communicate their own thoughts. Thus, it seems to provide a model for the NII. Yet the proposed NII

contains no similar structural feature to ensure that its users will be able to produce and distribute their own products. This degree of many-to-many interactivity is necessary, I suggest, for a truly liberating redistribution of power.

I would love to have the Clinton administration to prove me wrong by proposing a revised Communications Act that contains strong protections for many-to-many communications. I'm not counting on it, though. The most the vice president promised at UCLA is nondiscriminatory access – an antitrust concept intended to protect small and start-up information purveyors from the monopoly power of their big brothers. No doubt people will turn the NII to their own communicative ends, to the extent the architecture permits, but I find this to be small comfort. Many-to-many communications should be the cornerstone of federal information policy, not the object of guerrilla war.

James Cappio (cappio@panix.com) lives, writes, and practices law in New York City.

Nine Principles for Making Virtual Communities Work

By Mike Godwin

If all cyberspace gives you is an e-mail address – a place to hang your virtual hat and chat about your hobbies – you've been cheated. What most of us want is a place where we're known and accepted on the content of our character.

To get an idea of how fast the move to cyberspace is occurring, compare it to the growth in suburban housing in postwar America.

David Halberstam writes in *The Fifties* that "In 1944 there had been only 114,000 new single houses started; by 1946 that figure had jumped to 937,000; to 1,118,000 in 1948; and to 1.7 million in 1950." Halberstam attributes the growth to Bill Levitt's innovations in mass-produced housing, coupled with the immense postwar demand for such housing.

Over the last decade and a half a similar boom has occurred in "the Matrix" – the

term John Quarterman, of Matrix Information and Directory Services (MIDS), uses for the global web of connected computer networks and conferencing systems whose largest component is the Internet. In 1980 liberal estimates of the number of people online were in the hundreds of thousands – now they are in the tens of millions. "We estimate approximately 29 million users on the main global distributed networks in the Matrix, as of October 1993," writes Editor Quarterman in *Matrix News*, a newsletter published by MIDS. "This is not all

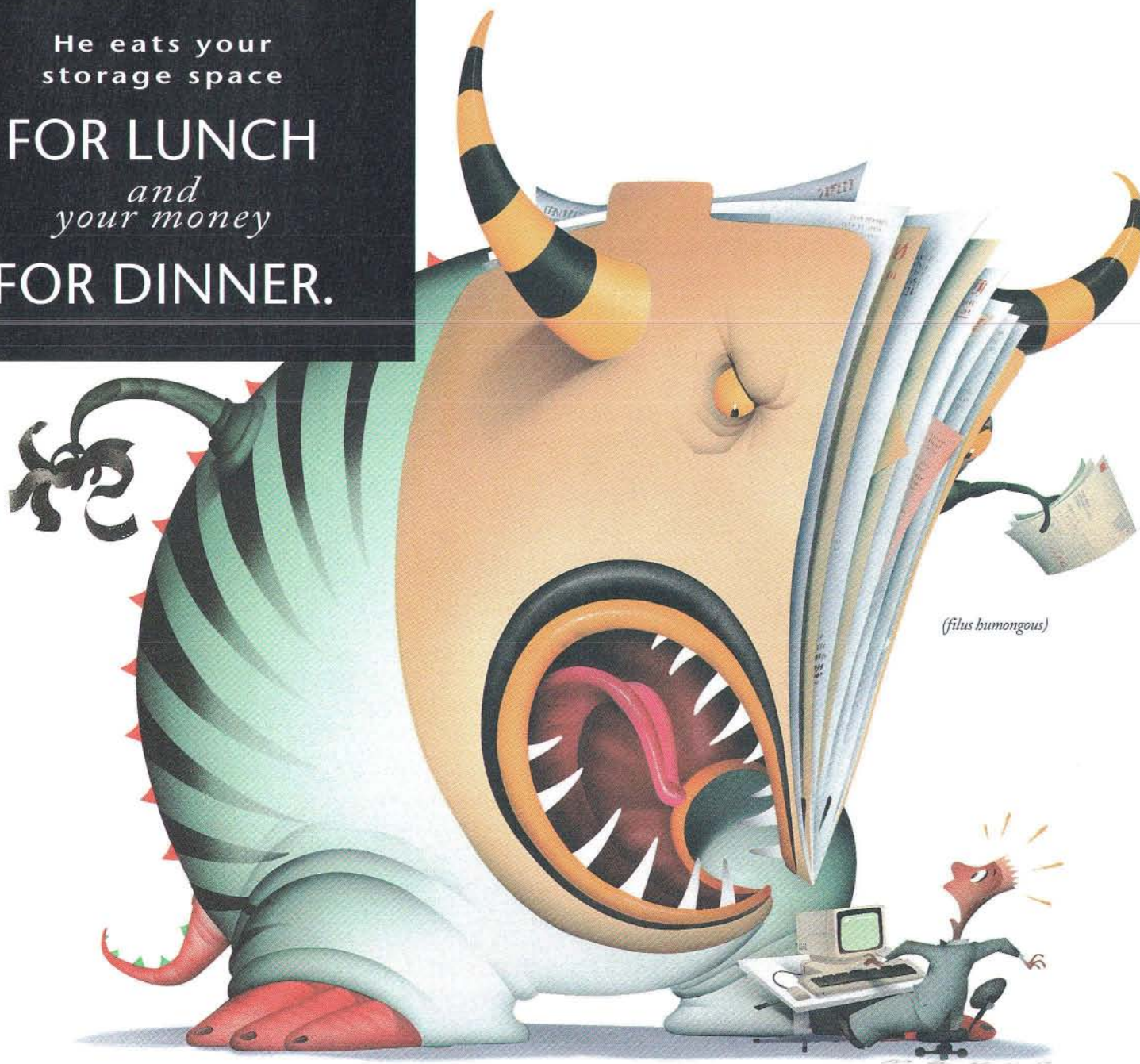
of the Matrix, but it is the largest distributed networks in the Matrix, namely FidoNet, UUCP, BITNET, and the Internet." Add in commercial online services such as CompuServe, Prodigy, and America Online, Quarterman says, and you may get nearly 35 million users. And that doesn't even count those who participate in bulletin board systems (BBSes) that aren't connected to any network.

Of course, not everyone with an e-mail address actually spends much time online. Clearly, a lot of people see a value to having that e-mail address, just as many people in the postwar world saw value in owning a house. "If a new car was a status symbol, a house was something else," Halberstam writes. "Owning a house came to be the embodiment of the new American dream."

But in cyberspace, increasingly, the dream is not just "owning a house" – it's living in the right neighborhood. One of the reasons the Well (Whole Earth 'Lectronic Link), which has only about 9,000 registered users, is such a tony address in cyberspace is that the perception of community is so strong. A few Well users argue that, in fact, this perception is illusory, but they ignore the fact that the value of a shared hallucination is that it's *shared*.

Compare the experience of logging on to CompuServe or America Online for the first time – it's a bit like being dropped

He eats your
storage space
FOR LUNCH
and
your money
FOR DINNER.



You're well acquainted with this megabyte-eating beast.

But perhaps you're not yet familiar with DynaMO™, the magneto-optical solution that eliminates the horrors of data storage.



DRIVE SPECIFICATIONS

Capacity	128-230 MB
Data transfer rate	2.1 MB/s (max.)
Average seek time	30 ms (typ.)
Rotational speed	3600 rpm

This compact little set-up will save you big. Like Syquest, you put an external drive

on-line and save your files to removable, rewritable cartridges. But unlike Syquest, you don't have to break the bank each time around.

With DynaMO, you can use 128 and 230 MB industry standard 3.5-inch cartridges. The cartridges aren't vulnerable to the everyday

abuse that might otherwise do in your data. In fact, Fujitsu cartridges are so reliable we back them with a lifetime warranty.

There's nothing frightening about setting-up DynaMO either. You just plug the drive into your PC or Macintosh.

Get the data on DynaMO by calling **1-800-831-4094**. Or request information by fax at 1-408-428-0456 (document 1368).

We'll show you how to enjoy some monstrous savings.

FUJITSU

COMPUTERS, COMMUNICATIONS, MICROELECTRONICS

in the middle of Manhattan without a map or a guide and trying to find a place you want to live. You may eventually find a simpatico neighborhood on the upper West Side or in the Village or in SoHo, but it will take you a while to learn enough about the city to make intelligent decisions. The same thing is true of large commercial conferencing systems and especially true of Usenet – is it any wonder that so many people try these systems for a while and then give up?

The Well seems to have gotten disproportionate press for its size – it's regarded as one of the "great good places" of cyberspace. True, there's sizable attrition of new users, as with all online conferencing systems, and it has yet to come to terms with how it wants to handle growth. But most of the people who stick around on the Well are positively fanatical about its value as an online community. So, taking the Well as my model, I'm laying out here nine principles for planning virtual communities and for making them work:

► *Use software that promotes good discussions.* Well users like to complain about PicoSpan, the system's conferencing software, but it does several things right, often by using what software designers call "constrained choices." For example, one can't start a new topic merely by responding to an old posting, so discussions and topics tend not to fragment the way they do on Usenet and CompuServe. And you can't respond to individual postings unless you either read everything that's been posted previously in the topic or else make a deliberate decision to skip those earlier postings. This tends to reduce the amount of redundancy and to make threads of discussion more coherent.

► *Don't impose a length limitation on postings.* Some systems limit the length of postings to 25 lines. This doesn't matter much if what you're interested in is banter and short tidbits, but it puts a crimp in discussions of history or politics or literature. Sometimes issues require serious space in order to be discussed fully. Individuals should be able to post essays as well as one-liners.

► *Front-load your system with talkative, diverse people.* The Well made a strategic decision early on to give free accounts or comp time to individuals and hosts who could be counted on to make interesting and provocative comments. In a way, the thing that makes the Well work is not that it brings together like-minded people, but that it brings together different-minded ones – users who inspire conversations and sometimes controversy with the strength and heterodoxy of their views.

► *Let the users resolve their own disputes.* On the whole, Well management has taken a hands-off position when it comes to users' interpersonal disputes and conflicts. Experienced users don't turn to management to complain – they choose instead to hash out their differences in public. And the Well has imposed few rules on public discourse. The result has been that the user population has developed or adopted its own community norms about quoting each other and publishing e-mail, and they are enforced largely by social pressures.

► *Provide institutional memory.* Some of the Well's conferences have postings dating back to the mid-1980s founding

of the system. New users can come online and read about things that happened on the Well, which is based in the SF Bay area, early on. For example, it helps one get a sense of the Well as a community to read how users helped each other during the '89 Loma Prieta earthquake or the Oakland, California, fire.

► *Promote continuity.* Of the Well's core users, a significant number were active in the very early days of the system, and most have been online on the system for years. What makes the Well feel like a community is what makes anyplace feel like a community – you see the same "faces," know the same personalities, and have ongoing relationships.

► *Be host to a particular interest group.* The Well is the cyberspace home of Deadheads – Grateful Dead fans regularly congregate on the Well to share information and converse about their favorite band. Their participation provides important cash flow to keep the community operating, and it also provides diversity, as Deadheads go "over the wall" and converse on non-Grateful Dead forums.

► *Provide places for children.* The Well provides access to the KidLink network for 10- to 15-year-old kids, but, more importantly, it has a tradition of treating young people with respect, on the assumption that what they say is as worth reading as anyone else's contribution.

► *Most Important: Confront the users with a crisis.* OK, it's hard to stage-manage crises. But it seems to be the case that events like the Oakland fire or LambdaMOO's cyberspace rape (see "Johnny Manhattan Meets the FurryMuckers," *Wired* 2.03, page 92) crystallize users' sense of belonging to a place they care about.

There are probably some other rules I haven't thought of, of course. But I think the ones I've listed here amount to a blueprint for successful cyberspace communities; the systems I know to have a truly communal feel (the Well, of course, but also ECHO, several MOOs and BBSes, and a few little pockets of Usenet) abide by most of these rules.

We should remember that Bill Levitt's "Levittown" was only the first attempt at solving a population boom, and it wasn't necessarily the most successful one. Subsequent developments – like George Mitchell's now-famous The Woodlands, a planned community in Texas – recognized that housing was only part of the picture: Schools, police, and well-designed public spaces were all essential to creating a place you want to be.

If all cyberspace gives you is an e-mail address – a place to hang your virtual hat and chat about your hobbies – you've been cheated. What most of us will want in the future, I think, is a place where we're known and accepted on the basis of what Martin Luther King Jr. called "the content of our character." But in the absence of planning and of a deliberate architectural vision about shaping virtual communities, the incoming hordes of cyberspace inhabitants will be left wholly alienated, isolated, without any sense of belonging.

Virtually homeless.

Mike Godwin (mnemonic@eff.org) is online counsel for the Electronic Frontier Foundation.

Just looking at Myst is an adventure

(Imagine what playing it must be like)

Now Available
on MPC

Only you can untangle the web of lies and deceit that shrouds the 5 worlds of Myst. So stop imagining. And live the adventure that tens of thousands of Macintosh™ users have already experienced.

To order, see your local dealer
or call 800/521-0203
and refer to code 354.

- ◆ Available on Macintosh and MPC CD-ROM
- ◆ 5 complete worlds to explore
- ◆ No inventory or time constraints
- ◆ Over 2,500 photorealistic images
- ◆ Non-linear game play
- ◆ Original soundtrack
- ◆ QuickTime™ video and animation



*The Surrealistic Adventure
That Will Become Your World*

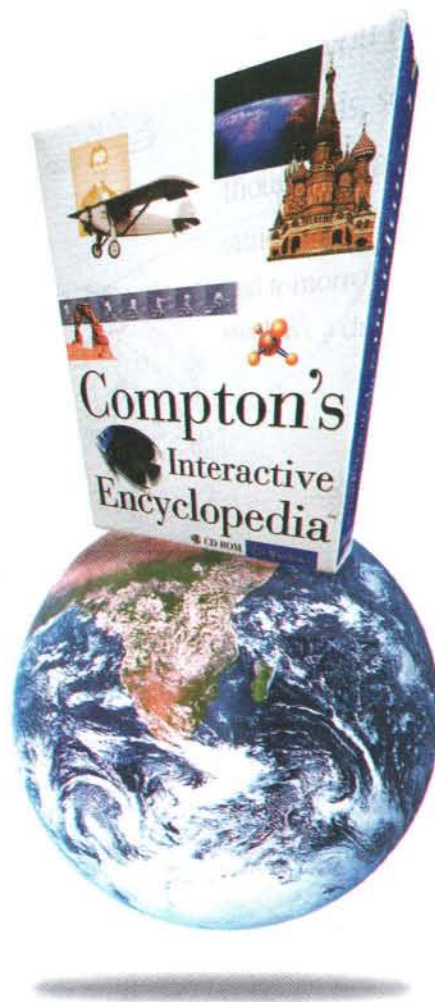
Broderbund



Myst is a trademark of Cyan, Inc. All rights reserved. Macintosh and QuickTime™ are registered trademarks of Apple Computer, Inc. MPC is a registered trademark of the Multimedia PC Marketing Council. © Copyright 1994, Broderbund Software, Inc. and Cyan, Inc.



\$129.



(The Biggest Interactive Encyclopedia on the Planet, Now Under \$129.)

It's pretty simple. Now you can get the world's best interactive encyclopedia on CD-ROM, the one with over 33,000 articles, 7,000 pictures, nearly 200 multimedia videos, sounds, animations and slide shows, plus an interactive historical timeline, for an unbelievably low price. Under \$129! Now that's earth-shattering news.



Get Your Copy Today At

EGGHEAD SOFTWARE
North America's Software Eggsperts.

SAM'S
CLUB
MEMBERS ONLY

COMPUSA
THE COMPUTER SUPERSTORE.

Available for MPC or Macintosh®. ©1994 Compton's NewMedia, Inc. 619/929-2500; Fax 619/929-2555. Compton's Interactive Encyclopedia is a trademark of Compton's NewMedia, Inc. All trademarks are the property of their respective owners.

40-10033-A

THE MERRY

They helped Steve Jackson Games
hand the Feds a stinging defeat in court.

PRANKSTERS

Their "Open Platform" proposal is the
heart of Gore's Infobahn policy.

GO TO

They lead the coalition
fighting the Clipper Chip.

WASHINGTON

In short, the **Electronic Frontier Foundation** is the
preeminent defender of our civil rights in cyberspace.

But just who are these people?

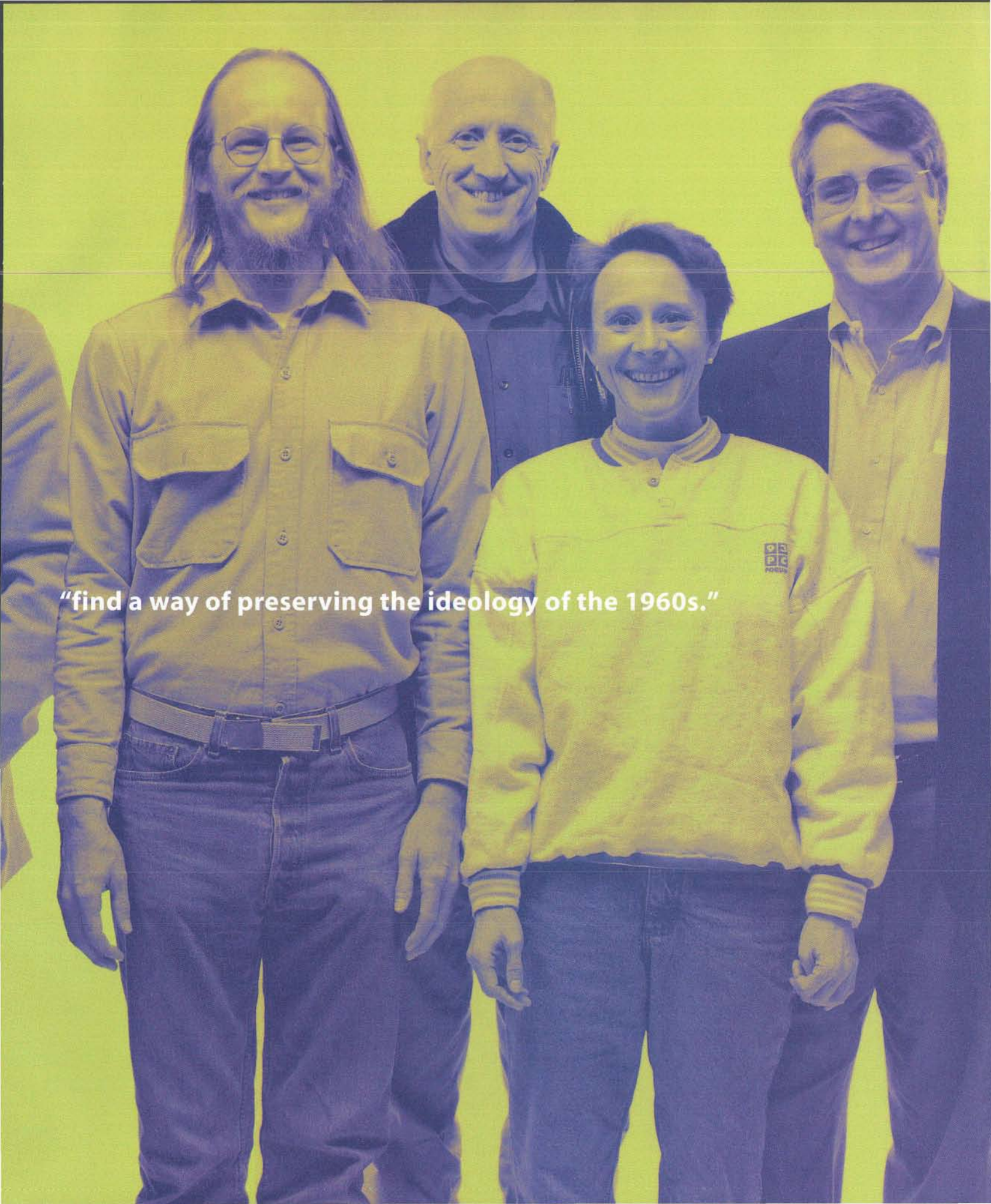
By Joshua Quittner



**The EFF does something that Mitch Kapor
has wanted to do for three decades –**

Left to right: Mitch Kapor, Rob Glaser, Jerry Berman, John Perry Barlow, John Gilmore,

Stewart Brand, Esther Dyson, David Johnson. Photo by Bill Zemanek.



"find a way of preserving the ideology of the 1960s."

Hardly anyone is eating the shrimp.

A silver bucket of chipped ice sits in the middle of the table, engorged with the fattest, juiciest shrimp you could ever want, and they're being ignored. So is the beef satay. The dozen people standing around the table don't appear to notice this – they're not even drinking the wine, so deep are they in celebratory conversation.

Did you hear about Barlow and Gore?

Did you see Mitch on C-SPAN?

More people wander into the back room of Bistro Rôti, reserved for tonight's quarterly dinner for the Electronic Frontier Foundation's board of directors and friends. The Bistro is a cozily upscale place overlooking the bay in San Francisco's skyscrapered financial district. It has a wood-burning stove and valet parking, though at the moment, as the sun goes to bed without a fight, the valet looks like he's about to thrombose because whoever left the white Jaguar in the front... also left the car alarm on.

The poor man is racing around, fitting his valet's key in each door, trying to get in and disarm the beast. It's getting louder with each pulse, the lights are flashing, and a crowd is gathering on the sidewalk. People are sticking fingers in their ears. At the last possible moment, the valet finds the one door that will accept his key (the *passenger* door?), slides in,

connect in one seamless web of point-to-point, peer-to-peer harmony. With equal access for all.

And it's really just the beginning. Plans are being laid, being pitched among the people here waiting for supper. They want to put the science back into political science. The idea is to go further than the Open Platform, further than the National Information Infrastructure.

The idea is to reclaim Washington.

It all makes sense when you consider that four of the ten board members are hackers, software people used to methodical problem solving. Start with one simple statement, add it to another until, the next thing you know, you have millions of lines of code that run the whole damn space shuttle. How hard could it be to hack government?

That bottom-up approach has led some of the people in this very room to talk about building a Net political party, founded on the premise that centralized authority is inefficient and archaic. Centralized government, they say, will be made obsolete by the push-button, interactive democracy that an Open Platform could create. "The fundamental thing (the Net does) is to overcome the advantages of economies of scale... so the big guys don't rule," says Esther Dyson, a board member, who says organized political parties won't be needed if open networks "enable people to organize ad hoc, rather than get stuck in some rigid group."

"The fundamental thing (the Net does) is to overcome the advantages of economies of scale industry's most intellectual newsletter. Dyson says organized political parties won't be some rigid group." The Net, the very network itself, is merely a means to an end. The end is

punches the right code, and the alarm quiets.

You half expect to hear an icy female voice – that dead-flat computer voice overused in techno-thrillers like *The Andromeda Strain*, back when technology was bad and out of control – you expect *that* voice to whisper out of the Jaguar's grille and reassure all:

The alarm has been aborted. All systems are now normal.

It's a funny counterpoint to what's going on at the private party within, where technology feels under control and at your service.

Someone near the shrimp says: *Mitch was mentioned by the vice president!*

He really was, but if you know anything about the EFF, you certainly know by now that Al Gore credited Mitch Kapor, EFF's chairman and co-founder, with helping draft the blueprint for the National Information Infrastructure. It was a fine moment for Kapor and a plum for the Washington, DC-based nonprofit EFF. The four-year-old organization has been trying to become *the* political force of cyberspace. Some people think it's succeeding. If you listened to the vice president's first major address on overhauling the nation's telecommunications policy, way back in December 1993, or read the administration's white paper, you might agree: An EFF concept was the keystone of the whole thing.

The Open Platform

It's barely a metaphor, and neither as sexy sounding as the electronic frontier nor as overused as the national information superhighway, but there it is, the Open Platform – a model for how telephone companies, cable companies, newspapers, TV stations, and your mom will all inter-

Kapor himself has been talking a lot lately about a "floating academy," an EFF evangelistic entity on the Net, spreading the word, propagating the vision of what the New World could be. The Net, the very network itself, you see, is merely a means to an end. The end is to reverse-engineer government, to hack Politics down to its component parts and fix it.

The Beginnings

Who *are* these guys?

In some ways, they are the Merry Pranksters, those apostles of LSD, who tripped through the 1960s in a psychedelic bus named Furthur, led by novelist Ken Kesey and chronicled by Tom Wolfe in *The Electric Kool-Aid Acid Test*. Older and wiser now, they're on the road again, without the bus and the acid, but dispensing many similar-sounding bromides: Turn on, jack in, get connected. Feed your head with the roar of bits pulsing across the cosmos, and learn something about who you are.

Among them are former acid-heads turned millionaires: ideologues who came of age during the 1960s, then proved themselves in the marketplace, Ross Perot-like. And now, grown up, they have retired from the business world to make federal policy, to change the things they were powerless to change when they were love-bead-festooned kids.

They're not interested in all federal policy – just information policy. Information policy is as important to the future as, well, Free Speech or the Freedom of Assembly or the Right to Privacy, all constitutional privileges that will either get trampled in the stampede to an Information Age (if some people have their way) or be reclaimed and strengthened (if others have their way). Enlightened information policy will protect our ability to exchange new ideas, to evolve and improve the human condition.

There are naysayers (not in this room, of course, but they're out there)

Joshua Quittner (quit@newsday.com) covers technology for Newsday. He wrote the high-tech thriller Mother's Day with his wife, Michelle Slatalla.

who wave their hands dismissively and say this is all a big fat joke. The EFF has already abandoned its original mission – looking out for the Little Guy in Cyberspace, they say. And where once the foundation warned against police agencies behaving like security guards for telephone companies, now too much of its funding comes from the local and long-distance telcos (in fact, no more than 10 percent of the EFF's US\$1.5 million annual budget comes from those companies). The EFF is ideologically peripatetic, a hobby for Kapor; it will surely disappear when Kapor loses interest, they say. (Kapor, EFF's first major contributor, now ponies up only 15 percent of its budget. That's still an expensive hobby.)

While admitting that this public policy phase of his life has a "huge novelty factor, all this new stuff, all these new skills to master," Kapor denies that his concern is short-term – not in his involvement with the foundation, not with the foundation's involvement in national affairs. The EFF is here for the long term because there is much meaningful work to be done. The organization does something he's wanted to do for three decades, he says – "find a way of preserving the ideology of the 1960s."

Introductions

But first, dinner. Everyone takes their seats.

Kapor, a pleasant-looking man with an almost ancient-Mayan mien,

Barlow: "I just got into trouble. At a certain point with kids, you just go bad. We all got motorcycles, we got Hondas. We became vandals. Got drunk."

This was not how Barlow's mother or father, a state senator, wanted John to turn out, so they packed him off to prep school. Fountain Valley High School, near Colorado Springs, Colorado, is important mainly in the Life of Barlow for introducing him to fellow student Robert Weir, who would go on to be a founding member of the Grateful Dead.

By 1970 Barlow himself had written his first song for the Dead and had just finished a novel called *The Departures*. It was about "looking for frontiers after there aren't any." It's never been published.

He did the starving hippie-artist thing in Manhattan. Bell-bottomed jeans. Wrote screenplays and more songs for the Dead. Did drugs and learned his way around the psychedelic frontier, even hung around with acid guru Timothy Leary and got the Dead to come visit Millbrook, New York, the hushed mecca of LSD-induced enlightenment.

The death of his father brought John Perry Barlow home to the Bar Plus Ranch, where 1,000 cud-chewing mother cows roamed on 7,000 acres. With American beef consumption in decline, though, Barlow looked for other ways to make money and, in 1986, bought a Compaq luggable computer as a writer's tool, "a better White Out."

...so the big guys don't rule," says Esther Dyson, an EFF board member and editor of the
needed if open networks "enable people to organize ad hoc, rather than get stuck in
to reverse-engineer government, to hack Politics down to its component parts and fix it.

stands at the front of the private room and beams like a proud owner.

The board members and guests settle into three long tables that form a large U. Waiters and waitresses quietly remove the uneaten shrimp and satay and whisper to each diner: *Chicken, steak, or fish? Hot from the wood stove.*

Now, Kapor makes a few welcoming remarks and asks everyone to introduce themselves and tell why they're here. "Starting with – you," he says, pointing to a callused-looking, bleary-eyed man imperiously wearing a blazer, a knotted silk scarf, and a name tag that says "Hi, I'm... barlow@eff.org." This is John Perry Barlow, the Great Metaphorician, the very man who coined the term "Electronic Frontier."

"Tell them how you travel, John!" yells Dyson, sitting behind him at an adjacent table.

"Well," rumbles Barlow, with the happy-scrabbly growl of a man who could never quite give up smoking, "sometimes I travel by bicycle, sometimes by computer, and sometimes – like the day before yesterday – I travel by Air Force Two."

Everyone hoots and cheers at this allusion to Barlow's (and therefore the Foundation's) triumph, hitching a ride with Gore from Los Angeles to San Francisco. It makes perfect sense that it was Barlow who scored this coup. Barlow, the traveler, knows everyone.

A Rancher's Soul

Picture a teenage John Perry Barlow, the consummate Young Rebel, bombing around Sublette County, Wyoming, on a beat-up Honda motorcycle, drunk and disorderly with a pack of pals, making a damn fool of himself, causing some of the elders in town to shake their heads and say, "Is this any way for a Barlow to behave?" It's the late 1950s.

Like Alice's looking glass, the Compaq took Barlow to some curioser and curioser places. An old friend, David Gans, who hosts the syndicated Grateful Dead Radio Hour, told Barlow about a place called the Well.

"He convinced me to get a modem and to log on to this thing so I could talk to Deadheads and hear what they had to say," Barlow says.

Barlow's great-granduncle had been the first white man to spend a winter in the upper headwaters of Wyoming's Green River, in 1875, and stories of that time had always resonated in Barlow. It's what Barlow was thinking about when he encountered cyberspace 111 years after his great-granduncle's adventure. "I thought it was amazing because it was like a small town. I'd been thinking a lot about small towns because mine was dying."

On a harsh December day in 1989, Barlow, now comfortably in his forties, was as oblivious as you can be to the brilliant light show that nature played daily on the mountains outside his window. He sat before the computer, awestruck and "zombified," as his whole TRW credit history spilled out across the screen, courtesy of a budding young hacker from Queens, New York, named Phiber Optik. This event was the climax of a ten-day, flame-filled online forum about hackers sponsored on the Well by *Harper's* magazine. (Phiber had put his modem where his mouth was to cap off a flame war he and Barlow engaged in during the forum.) Barlow sent e-mail to Phiber – "call me" – and Phiber did. They became friends, in a way the old rebel and the young one.

On Martin Luther King Day, January 15, 1990, AT&T's telephone network failed sensationally, disrupting service for hours in the Northeast. Suddenly, the words, "we're all connected," took on a new, darker meaning. Less than two weeks later, Phiber Optik and two fellow hackers in New York City were raided by the US Secret Service. Their com-

128 ►





RASTER MASTERS

Enough with virtual reality – virtual hallucinations?

"Free-form mind blowing," is how Raster Master Creon Levit describes the goal of his band's visual music. "We're trying to develop a new performance medium: live computer-graphics ensemble performance."

Raster Masters' improvisations are a cascade of swirling, metamorphosing images: '60s light shows grafted onto '80s music videos, real time. "Enough of reality – let's do virtual hallucinations," Levit declares. "We are instrument builders, playing away on the visual equivalent of the first synthesizers."

Give this group one thing: They've got some high-end equipment. No wimpy Video Toasters for this outfit! Try two Onyx RealityEngines² along with two Indigo² Extremes. It takes a 12-foot truck to pack up all their beefy machinery; setting up for a performance takes five hours. For these artists, corporate sponsorship resembles traditional patronage of the arts more than it does the run-of-the-mill Miller Beer logo stuck in your face. Two of the Raster Masters work for Silicon Graphics; among their duties is writing the code that creates their visual music – code that a Macintosh could never crunch. SGI, of course, also provides the machines that the Raster Masters use.

Of the group's three highly skilled programmers, two – Levit and David Tristram – worked at the NASA Ames Research Center, in Mountain View, California. Levit still works there. When Tristram left NASA, he went to work at SGI. There he met Ron Fischer, the Raster Masters' third programmer. Fischer compares performance graphics to "puppets, directly reacting to many operator actions at once."

Graphic designer Maggie Hoppe plays the role of mixer-cum-video-switcher. Sound designer Jonathan Nelson spins a dense mix of sounds. Look for the Raster Masters in Amsterdam at the TILE Convention on June 28 and at the Montreux Music Festival in Montreux, Switzerland, in mid-July. Stateside, you can see them at Digital World in Los Angeles on June 9 and at SIGGRAPH in Orlando, Florida, July 24 to 29. E-mail: rm-request@tesla.esd.sgi.com. – Jonathan E.

Jonathan E. (jeve@well.sf.ca.us) believes that world music is a huge ever-growing pulsating brain.

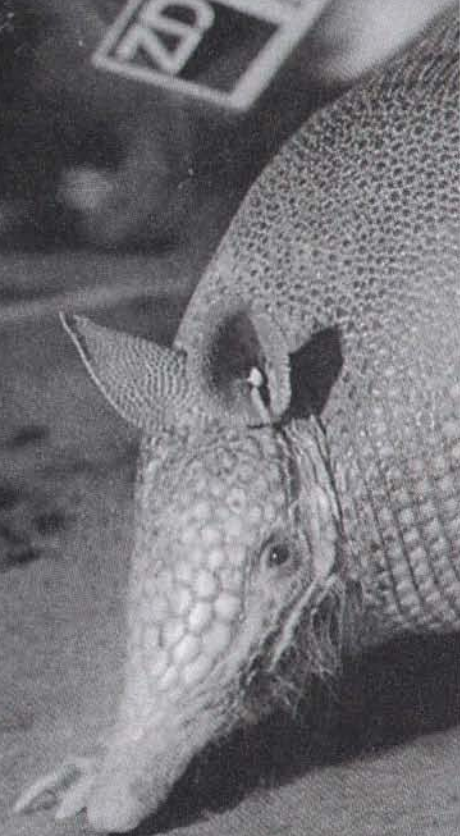
Photos by Sylvia Plachy

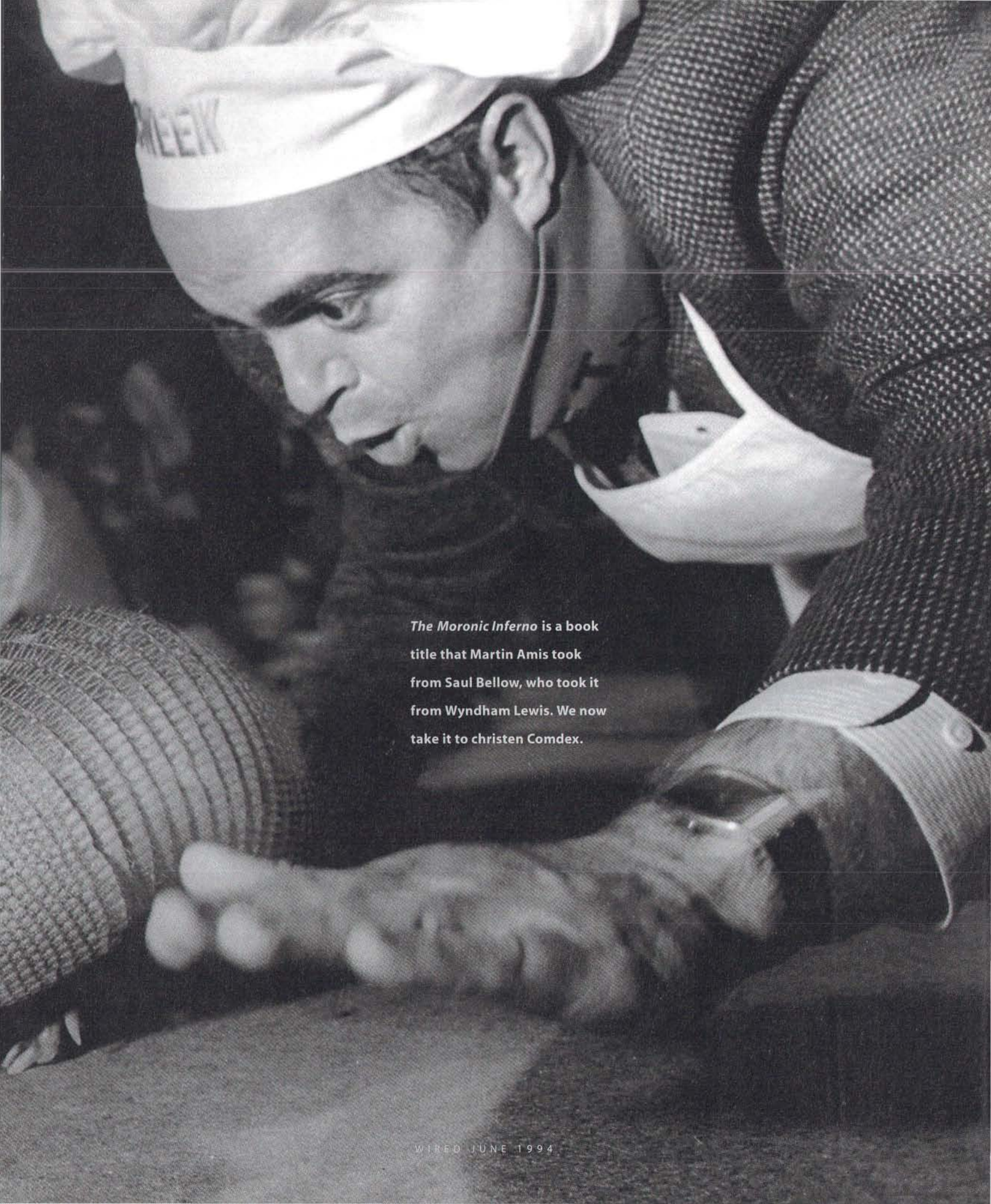
Text by Marshall Blonsky

Moronic Inferno

Say it as
in a litany:
Com-de-x,
COMputer-
DEaler-
eXpo.

The fall Comdex is the most important annual trade show for digital consumers. Every year 2,000 exhibitors rent 2 million square feet of convention space in Las Vegas, the synthetic city. Every year more than 100,000 people stroll through this grand flea market to sell, buy, or promote a bit of The Future.





The Moronic Inferno is a book title that Martin Amis took from Saul Bellow, who took it from Wyndham Lewis. We now take it to christen Comdex.

For one week Comdex convenes a socioeconomic nation – the future of advanced capitalism – which many of us only read hints of in the business section of our morning papers.



Don't think Comdex is just a carnival of booths – it's a war zone. The companies are going at it banner to banner, promotion to promotion, image to image.





The crowd on the floor is so afraid of missing the new, the hot, the latest, that – like ravaging insects – it seizes every brochure, every press release at every booth, laid in its path like bait.



A black and white photograph of a person in a large, feathered costume, possibly a peacock or a similar bird, standing on a stage. The person is wearing a dark outfit and high heels. The background is dark with some light spots, and the stage floor is visible in the foreground.

Comdex is a jarring
urbanscape – Micro-
soft's cathedral and
Vivid Video's porn
shop, 3M's Century
City tower, and Micro-
graphx's armadillo
racetrack – a sprawl
of (mostly) men and
moving things in
which you lose your
way and your head.

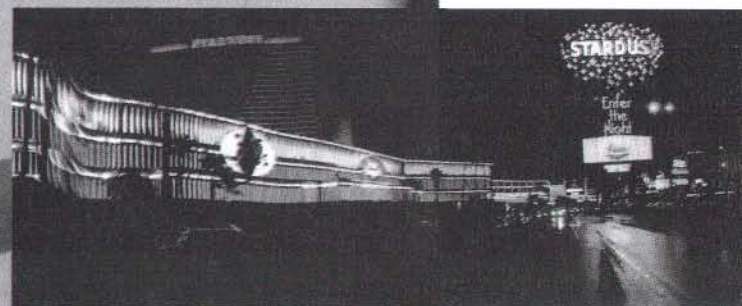


More than 100,000 digital road builders live out the simulacra of Steven Spielberg. A simulacrum, like the entirety of Comdex, is a substitution where you forget what the substitute is substituting for.



The floor is Fellini's *Satyricon* – a city of hell that is laid out, every booth and footprint of it, as entertainment.

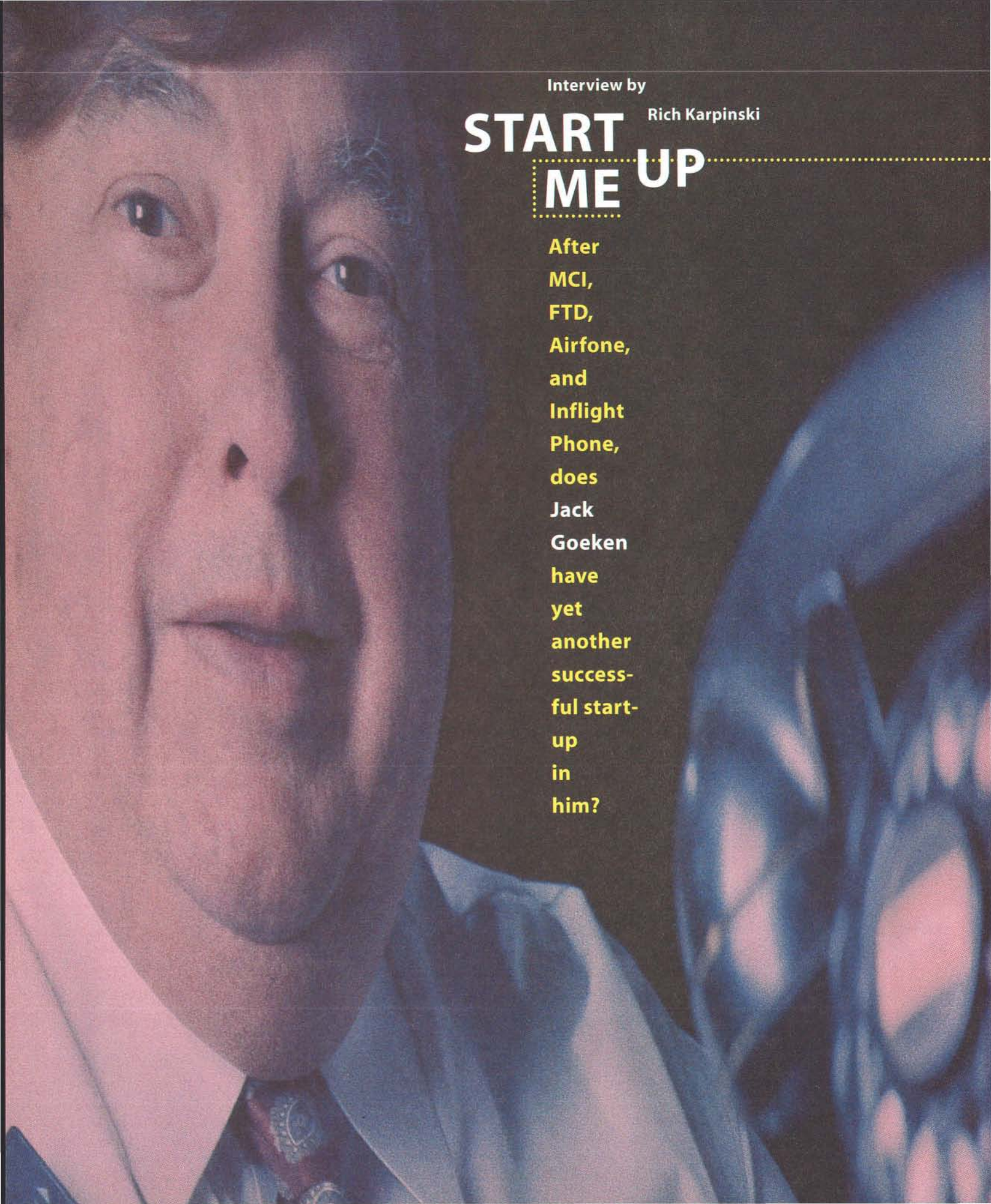




Sylvia Plachy has been a staff photographer at the *Village Voice* since 1977. Her book *Sylvia Plachy's Unguided Tour*, won the ICP Infinity award in 1991.

Marshall Blonsky teaches semiotics at the New School for Social Research in New York and at New York University. He is writing a book for Viking Penguin on the creation and promotion of the Apple Newton.

At Comdex, the gold of the future – info tech – is transmuted into lead, the whole cosmology of retailing and reselling. The nerds hit pay dirt and party out, but do they know what to do with their treasure?



Interview by

Rich Karpinski

START ME UP

After
MCI,
FTD,
Airfone,
and
Inflight
Phone,
does
Jack
Goeken
have
yet
another
success-
ful start-
up
in
him?

Wired: The story of how you beat AT&T is a classic David and Goliath story.

Goeken: Myself and some other fellows were selling two-way radio systems. We put in an application for the microwave license from Chicago to St. Louis. The only purpose was to allow truckers to put their two-way radio systems on our towers and use the microwave towers to bring the signal back to Chicago or St. Louis. We never figured on making any money on this. We just felt we'd sell more radios and get some maintenance contracts. But AT&T (and other telephone companies) all filed a petition to deny our application. To show you how smart we were, we knew it was going to take some big money to fight these companies, so each of us put in \$600 for a total of \$3,000. The rest is history. What's great is that it shows that five people with a belief and a willingness to stick to it and \$3,000 can go in there and fight the world's largest company and change an industry.

Is it still possible for one person with an idea to take on today's communications conglomerates like Bell Atlantic and TCI?

The advantage an individual has over a big company is dedication, fighting for something he believes in. An entrepreneur is a person who doesn't understand what an obstacle is. Lots of times people are afraid to make a move. To me, it's not how many failures you have, it's getting that one success that pays off. You take an individual – he's going to put the effort in to come up with a better product and give better service to the customer. Today, MCI is more structured than AT&T probably ever was. But that's the way life goes. With MCI falling into the same

.....
Rich Karpinski (511-5059@mcimail.com) is Technical Editor/News Director of Telephony, a weekly trade magazine covering the telecommunications industry.

Thirty years ago, John "Jack" Goeken strung a few radio transmitters on a St. Louis-to-Chicago truck route, founded MCI Communications Corp., and eventually toppled the Bell System. Later, he combined computers and flowers (Floral Network Inc. (FTD)) and phones and airplanes (GTE Airfone Inc.). His latest venture, In-Flight Phone Corp., uses all-digital cellular radio, video screens, and under-the-seat 386 PCs to bring noise-free communications and information services to the skies. Now Goeken, 63, is plotting one more grand battle: He plans to take on the phone companies in the local service game. "One thing I don't want to do is sit in a rocking chair," he says.

mold, it opens the door for some new people to come in and make some inroads.

But the playing field in communications today seems tilted toward big companies. For instance, the government is auctioning off PCS spectrum – basically starting a new industry – only to companies that have the big bucks.

With MCI, there was no way we could have bid in an auction. But we came in with lots of innovation. If you have to go out and buy spectrum, the financial people run the company from the start. And the entrepreneur with a good idea gets shut out.

Can large companies drive innovation?

Large companies don't take risks. So there are lots of opportunities out there. That's why when we get In-Flight up and operating and profitable, hopefully later this year, I'd like to go into the local distribution business, compete with the local telephone companies. I think

that's a tremendous market. That would be like a complete circle: Start out with competition in long-distance and end your life with competition for local phone companies.

There are a lot of companies preparing to take on the Bells (including, now, MCI). What will you do differently?

I'm not going to give away my ideas, but what we'll do is be better at a lower cost. I'll keep my mind open, see who's out there and what's being offered. We'll look at using a mixture of transmission technologies. No one technology fits every application: fiber optics, coaxial cable, spread spectrum, gigahertz microwave radio, infrared. What we'd do is form a company with a nucleus of experts from various aspects of communications. We've been talking to people enough to know there's an interest. Nobody's come up with my approach so far. We would operate locally, on a nationwide basis. We'd be putting all new equipment in place. We're looking at maybe \$200, \$250 per subscriber. (Typical network costs today are \$1,000-plus per customer.)

Will those cost reductions get passed on to consumers?

If you look at what telephone companies charge today for long distance service, it's ten or fifteen cents a minute. When we started breaking up the monopoly, they were charging three to four dollars a minute.

Even the threat of competition keeps prices down. If someone is making a lot of money, that is an invitation for somebody else to come in and compete with them. The reason that MCI (recently announced plans to enter the local phone business) is that more than 40 percent of every dollar it gets goes to the local phone company. Here they travel thousands of miles and the local phone companies get as much for the last couple of miles as MCI gets for the long haul.

How can you make this venture profitable?

A communications network is like a taxicab with a meter. It doesn't make any money until the meter is running. So not only do you put in a network, you look at every way possible to make people use it.

So you have to leapfrog the competition. How does that apply to entering the local exchange industry?

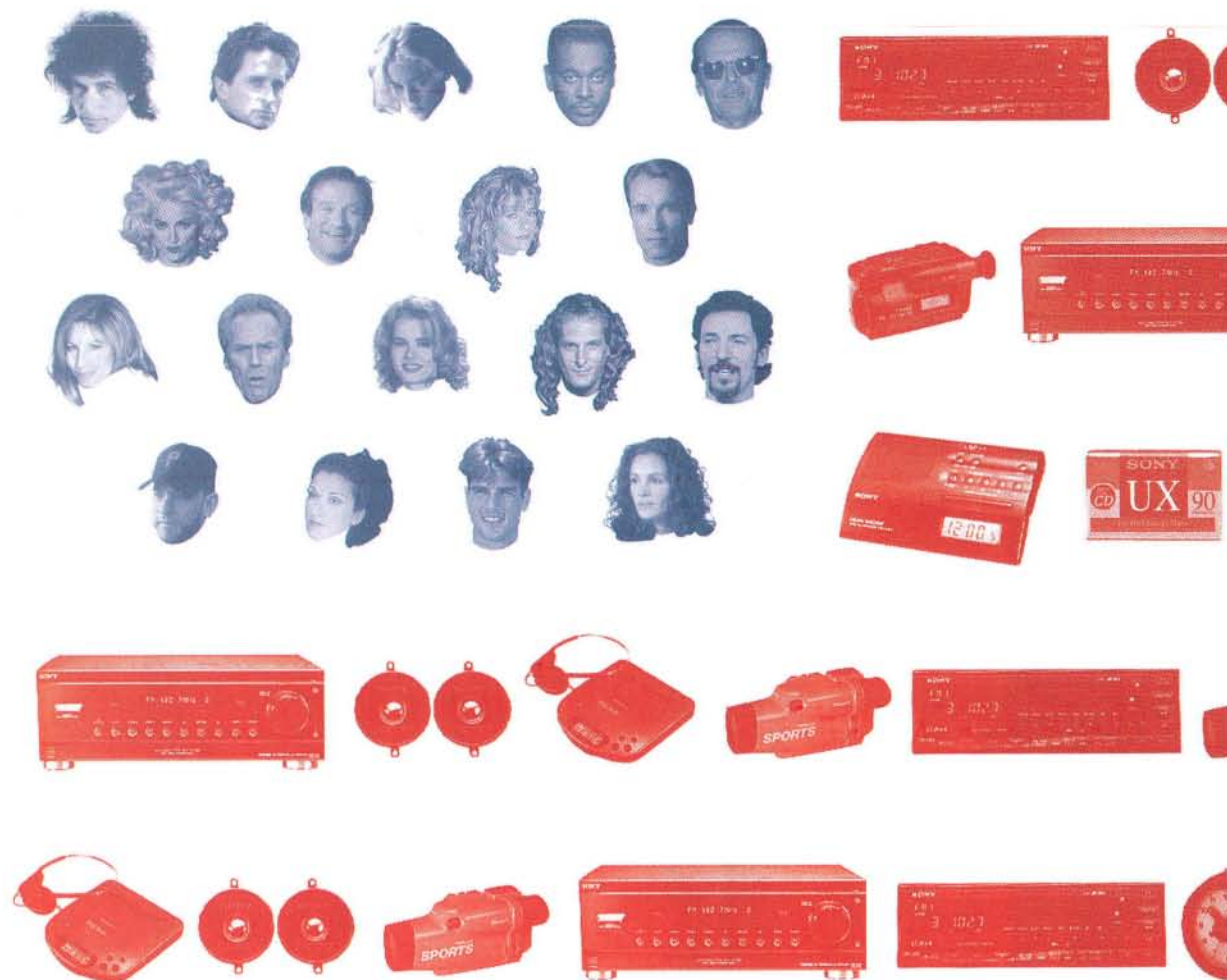
There are a lot of people who just want plain, low-cost telephone service. Others want all of these multimedia types of services. There are so many things you can do with a local telephone network. You can use it for medical, security, warning systems. You can cut the cost of reading meters for electric and gas companies. Information retrieval. Entertainment. Using the network for voice service alone is a thing of the past.

Is there an advantage in starting from scratch, with no existing network in place?

Traditionally, phone companies have used a 20- to 40-year write-off (of their equipment). But today, technology changes so fast that after two years, five years, you write it off; it's obsolete. A new guy can come in with the latest technology that is available. You have some advantages coming in fresh.

The tenth anniversary of the AT&T divestiture was this January. Any reflections on the breakup and the impact of MCI?

About five years ago, I asked Norm Frost, the attorney for AT&T opposing MCI, "What do you think of the MCI decision?" I thought he was going to use the old Bell line and say we ruined a good telephone system and all that. Instead, he said it was the best decision there ever was. Despite all the doom that AT&T was predicting, they're still out there making money. So is MCI, so is Sprint. Everything's exciting; new things are happening. It's a whole new game. That's what's coming to the local telephone business now. ■ ■ ■



THE AMERICANIZATION OF SONY

THE UNTOLD STORY

High over Manhattan in the AT&T building, in private club rooms with coffered ceilings and studded leather walls, the executives of a century-old engine of American commerce used to meet over the choicest food and the finest wines. No more. Now it's the Sony Club, in the Sony building, 35 floors above the Sony Arcade. Now, at parties, sake flows from a barrel labeled "Morita." Akio Morita, "Mr. Sony," is the scion of fifteen generations of sake brewers.

But this is no vintage '80s, tired scare-story of how Japan is buying up America. It is the untold story of

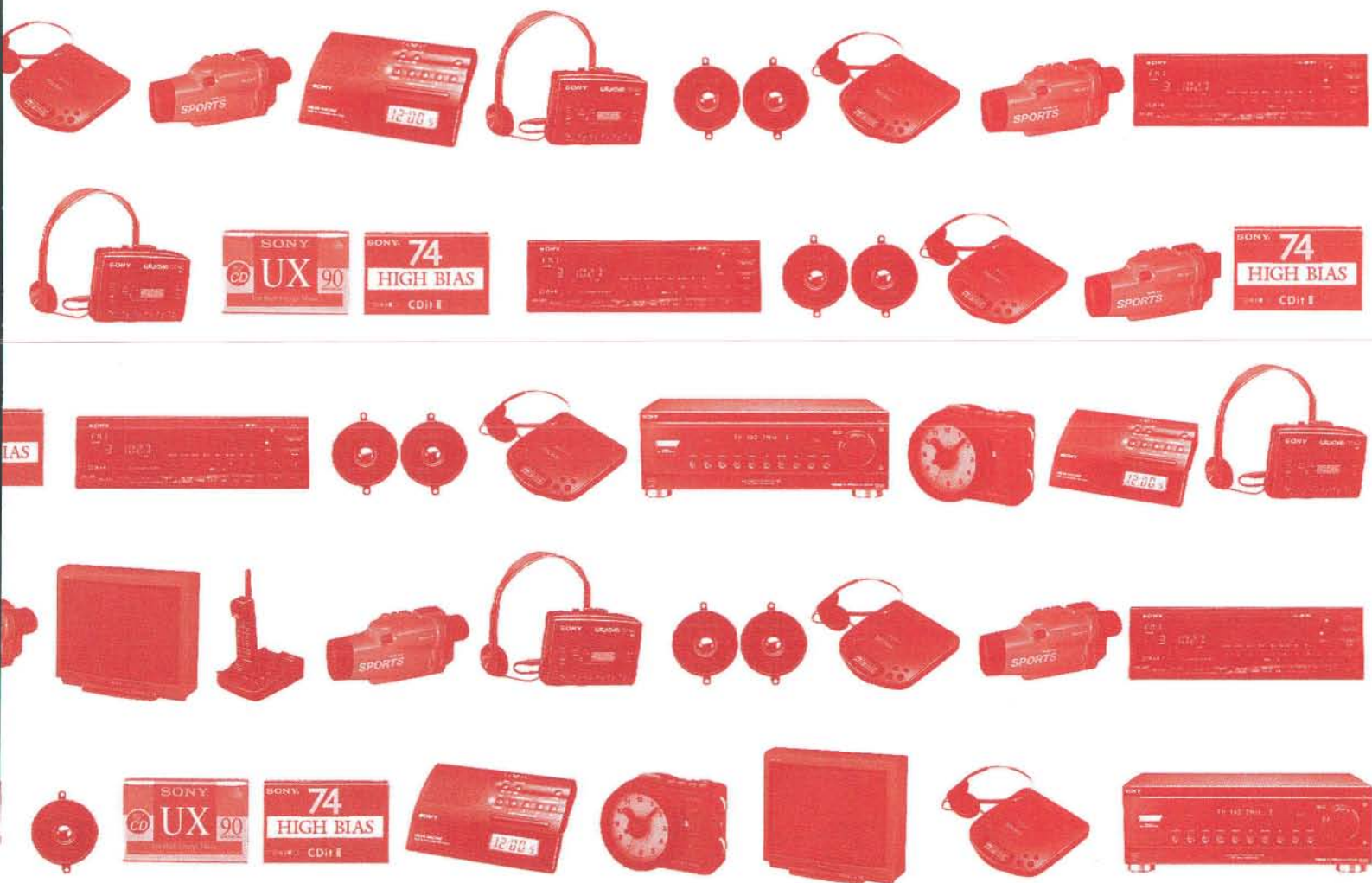
how Sony is turning American faster than any of us are turning Japanese.

Sony's International Executive Committee meets not in Tokyo but in New York. The official language of Sony is not Japanese but English. If more than one *gaijin* (non-Japanese) is present in a company meeting, the meeting is held in English.

Since 1990, the US part of Sony has sold more goods than the Japanese part. And the gap has grown each succeeding year. Sony's assets in the United States last year topped US\$14 billion, more than a third of its global assets. Sony Corporation of America, formed last

year in a reorganization that put all US operations under one roof, employs more than 30,000 people, two-thirds of them in the US. It exports over half a billion dollars worth of products from the US per year – nearly a third of everything it builds.

If Sony Corporation of America were a separate company, it would rank 58th in the Fortune 500. Its chair, Mickey Schulhof, is American, as are most of the executives of the subsidiaries under him – except for Olaf Olafsson, the 31-year-old Icelandic novelist who heads Sony Electronic Publishing.



OF HOW SONY IS RAPIDLY BECOMING AN AMERICAN COMPANY. BY JOE FLOWER

Sony has been manufacturing in the US since it opened a Trinitron plant in San Diego in 1972 – and by now many of the televisions that come out of its American plants are completely made in America. Of the 10,000 employees of Sony Engineering and Manufacturing of America (SEMA), only 170 are Japanese, and their numbers are shrinking, not growing.

"They ought to just re-register the corporation in Delaware," says Chuck Goto, an analyst with S.G. Warburg in Tokyo. "There would be a lot of advantages."

But this shift away from Japan is

not really new. "Sony" doesn't mean anything in Japanese. The name was picked for its look in Roman letters, for the Latin *sonus* (or sound), and for the resonance with the happy English words "sunny" and "sonny boy."

Sony wants to bridge the gap between hardware and software, to become the first global company that builds both the boxes and what comes out of them. It is this desire that is shifting Sony's center of gravity away from Japan. As another Sony executive put it, "The US is where the future of the company unfolds."

Change is the Constant

Sony is moving more and more into businesses that are quintessentially American. In Los Angeles, the gaudy, modern slot-machine-style building of steel, glass, and marble that was the MGM Plaza is now the Sony Plaza. If you stroll across the street you'll enter the gates of what was the MGM Studio and the Culver Studios – now the Sony lot. You'll see Columbia Pictures (a Sony property), a Loew's Theater (another Sony property), as well as 24 sound stages to TriStar Pictures (yet another). The place never looked better: the buildings that manage to com-

bine Southern colonial with chrome-and-glass Art Deco; the buff, powerful magnolias that somehow never seem to drop a leaf; the manicured lawns; the streets between the sound stages tarted up with false fronts and shops like a Disney movie theme park; all looking less gritty and more Hollywood-as-we-imagine-it than it ever did

Joe Flower (bbear@well.sf.ca.us) is the author of Prince and the Magic Kingdom: Michael Eisner and the Re-Making of Disney. He wrote "3DO: Hip or Hype?" for Wired 1.2 and "Iridium" for Wired 1.5.

under its original owners.

And in San Jose, California, amid the vast empty spaces and orange groves north of downtown rises an enormous new building: Sony's new high-tech research center, with its four-story atrium as long as a football field. All glass in front, all white inside, all Sony gray slate flooring, it is as large as an airport terminal, unpeopled but for two receptionists, the galleries above and beyond them brimming with the engineers and programmers of Sony's rapidly growing presence in Silicon Valley.

The executives of Sony of America express a surprising independence from Tokyo: Although he is Japanese, Kunitake Ando, president of SEMA, considers it part of his

mission "to make SEMA autonomous," and describes Sony units in Southeast Asia as "our competition." He says, "I'm not the typical *salariman*, I'm not afraid to fight Tokyo. It's a question of who makes the decisions. If you expect to win here, you have to make decisions here, not in Tokyo."

In the colonnaded Saturday-lunch quiet of the dining room of New York's St. Regis hotel, Kuni Ando suddenly pops a line from the musical *New York! New York!* into the conversation: "If you can make it here, you'll make it anywhere."

Vectors of Change

The reasons for Sony's shift to America are many.

► It's pushed from the center:

For Sony, the shift outwards – and to the US – is not a change in direction but the culmination of an effort played out over five decades. President and CEO Norio Ohga has told Sony's global executives, "Don't think of what Tokyo says as the golden flag" (the battle flag of the shogun that all must follow).

► It's pulled from the edges:

American Sony executives build their empires by pulling work and decisions here, into the world's largest single economy.

► It's forced by shifts in the yen:

As the yen buys fewer dollars, it makes sense to shift as much work as possible to the biggest market and pay for it in dollars.

► It's propelled by shifts in labor costs and skills:

Americans used to complain about competing with "cheap Japanese labor," but by the '80s the cost of Japanese labor equaled that of American labor. In the last few years, with the rise of the yen and America's ferocious competition on quality, American labor has become cheaper than Japanese labor in high-tech industries – as have American parts. And America has what Pradip Banerjee, a manager at the San Jose chip design center, calls "the talented people that we need to attract."

► It's driven by trends in markets:

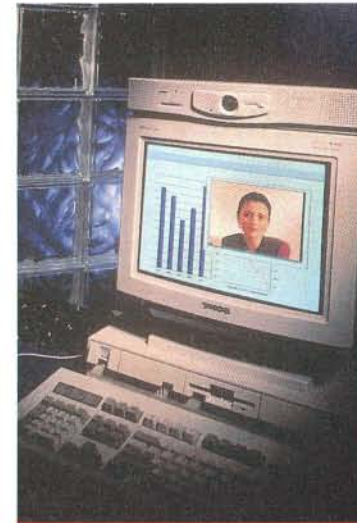
In the last two years especially, the American economy has recovered. While 1993 was a record year for



Sony headquarters in New York.



In the HDTV edit room.



Videoconferencing for \$1,000.

Hot Tech:

What's Hot From Sony

HDTV: On the Sony Pictures Studios lot in Culver City, a simple nature scene – eagles, a canyon – runs three times on a screen the size you'd see in a multiplex. The first one is clearly video: the flat colors, the lack of detail. But the last two – one a traditional 35 mm film, the other high-definition video – are indistinguishable. Sony's HDTV unit does myriad post-production tasks for Hollywood, changing the film to video for editing, then turning it back to film. Last Halloween the same unit heralded a possible coming era of filmless film distribution when it beamed *Dracula* from Culver City to a theater in Burbank.

Special Effects: At Sony Pictures Imageworks at the studios, the monitor shows a bit of *In the Line of Fire* – a news clip in which a young Clint Eastwood walks between Jack and Jackie Kennedy. How'd they do that? "We took a still of Clint from an early-'70s movie," explains Imageworks executive producer Bill Birrell. "He was bruised, had a couple-day-old beard, longish hair, a wide-lapeled '70s suit, and a wide tie. We digitized the picture, got rid of the bruise, gave him a haircut, a shave." Similar magic can erase unwanted passersby from crowd shots.

Cheap Videoconferencing: The monitor in the corner of the conference room in the San Diego plant has something a little odd sitting on top: a flat bezel, the same color and design as the monitor, with a tiny video eye and a few microphone holes. Sony already makes US\$100,000 videoconferencing units and \$30,000 roll-around versions. But when Sony's T.C. Brown saw people duct-taping Handy-Cams to the sides of their monitors, he knew there was a market for something inexpensive. This unit will cost about \$1,000 and will be followed by monitors with the capability built in.

the entertainment hardware business in the US, the Japanese and European economies have continued to wallow in recession. This year, the German economy is expected to grow by 0.6 percent, the Japanese by 0.9 percent, and the US economy by 2.7 percent.

And in some areas, the Japanese market is simply not as mature as the US market. It's hard to build the consumer end of the infobahn in a country where most homes aren't wired for cable.

► **It's powered by the changing shape of the hardware business:**

As hardware becomes more and more a commodity business, characterized by the swift spread and imitation of new technologies,

Sony is forced to rely on things that cannot be imitated: its particular sense of design, its aesthetic decisions, its service abilities, and eventually its software – the music, movies and games. Technical and research decisions are not specific to a culture or bound by geography, aesthetic decisions, and service capabilities.

Corporate power follows the work. "If you really want to build it here," says Ando, "you've got to design it here. If you design it here, you've got to have major decision-making power here. So this authority is shifting to the US."

With that shift comes a certain independence. In fact, American Sony units have carried out many

projects despite Tokyo's disapproval, including for instance the entire "My First Sony" line. Headquarters didn't see the point – who would buy electronics in brightly colored cases with big knobs?

Tokyo also didn't see the point of the "Vision" project (an inexpensive teleconferencing box with a charge-coupled videocam, a microphone, and some special circuitry, made to fit atop your monitor). Ando says, "We talked to them for over a year. They didn't get it. So our factory in San Diego took it on." Within Sony, when Tokyo says no to something, it doesn't mean "Don't do it." It means "We won't give you the budget for it."

Tim Agnew, an executive at

Sony's display systems group in San Diego, says, "The 'Vision' idea was a bit of a struggle, and there was some tension, but they didn't stop us." Brian Frohlich, of the same group, says, "All I really need from Tokyo are parts numbers. The rest I can scramble up here or somewhere else in Sony of America."

Sony Biz

Sony is in three main lines of business: consumer electronics (the Walkman, TVs, boomboxes), professional and business electronics (telephones and telecommunications, computer peripherals, semiconductors, broadcasting equipment, medical imaging, display systems, factory automation sys-



TV studio on your desktop.



Bram Stoker's Dracula: broadcast directly from Sony to the theater.



"\$400? That's worth it."

GUI Video: "Want to make the bear growl? Okay, we'll drag that growl down here. Now we'll put in a fade." With the ease of word processing, a Sony engineer in San Jose, California, is editing a video clip by the click-and-drag method, all on one screen. It's Destiny, Sony's newest GUI desktop production video editing system, designed to be cheap and fast at mixing live feeds with images from disk and tape for "the ubiquitous electronic newsroom." What's cheap? About US\$27,000. Cheap for a TV station.

Uplink Jukebox: Across the street from Sony Pictures Studios sits the prototype of a huge uplink facility Sony has built for Hughes' DirecTV digital satellite broadcasting venture in Castle Rock, Colorado. It's a massive computer-controlled jukebox that will feed all of the bird's potential 180 channels from one ground station under a single control. The robot arrays with their ranks of broadcast videotapes look like an industrial-strength version of cafeteria vending machines, but they are a vast improvement over "sneakernet," the usual practice of hand-carrying the tapes to the machines for broadcast.

Theater Sound: In a Sony Pictures screening room, there's Clint again, in a very quiet scene. When he walks, the scuff of his heels follows him across the screen – and actually off the screen – in uncanny realism. In a scene from *Last Action Hero*, Schwarzenegger's boots hammer on car tops, guns fire, sirens wail, helicopters whirl overhead, broken glass crunches underfoot – each sound in the aural collage ringing separate and crisp. It's SDDS, Sony Dynamic Digital Sound, Sony's eight-channel entry into the next-generation surround-sound sweepstakes.

Sony Plaza: On a Saturday before Christmas, on the ground floor and in the basement of the Sony offices building on Madison Avenue, crowds of people play with an acre or so of Sony HandyCams, VCRs, wide-screen TVs, CD-ROMs, Mini-Discs, My First Sonys, and Walkmen set up in racks, in bedrooms, living rooms, even in a car hung on one wall – its little built-in video screen rises out of the shift console. People say things like: "Ooh, \$400? That's worth it!" "Yeah, 27 inches is a good size for the bedroom." "Harry, you ought to put one of these total entertainment theaters in the basement."

tems), and popular recorded entertainment (music and movies, movie theaters, CD-ROMs).

The first two have been on Sony's worktable since the company's founding in 1946. The third business is new, in part because the first two have gotten more and more difficult. The traditional engine of Sony was (1) inventing new technologies, then (2) turning them into products, and (3) marketing the hell out of them. But the increasing speed of change itself is making that an ever-riskier formula. "Fifteen years ago we had a two-year lead time over our competitors," says Schulhof. "Today it's two months. That trend toward making a commodity of electronics was one of the motivations to get into the entertainment business. If you have Jack Nicholson or Barbra Streisand, nobody can copy that."

For decades Japan has been king of electronics, especially consumer electronics. Ever since it introduced the first successful transistor radio in 1955, Sony has led much of that charge, with the first pocket-sized radio, the first AM-FM transistor radio, the first transistor television, the first home VCR, the charge-coupled device, the Walkman, the CD (with Philips), the MiniDisc, and other innovations.

Japan made the boxes. Americans, more than

anyone else, made the boxes sing.

Then, in the 1980s, Japan invaded Hollywood. In 1988 Sony bought CBS Records, and in 1989 it bought Columbia Pictures plus TriStar Pictures, Loew's Theaters, and a raft of smaller entertainment properties – and Wall Street and the entertainment industry snickered. What would a Japanese box-maker know about managing the mercurial, pyrotechnic, maddeningly personal, egomaniacal magic of Hollywood studios? Comics did takeoffs: Schwarzenegger learning to bow, Dolly Parton stuffed into a kimono. It couldn't work. Sony would hemorrhage money.

At first it seemed they were right: The savvy locals were taking the foolish Japanese for a ride. The \$3.4 billion purchase price nearly doubled with costly add-ons, including \$200 million to steal new studio heads Peter Guber and Jon Peters from Warner Brothers, then a half-billion to settle the suit Warners slapped on Sony for stealing them, then another \$100 million to spruce up the bedraggled Culver and MGM lots Sony wound up with in the settlement. Then Guber and Peters went to town: Charged by their Tokyo bosses with gaining market share, they did it the way it is done in Hollywood. Money flowed like sake. **134 ►**

"If you really want to build it here, you've got to design it here. If you design it here, you've got to have major decision-making power here. So this authority is shifting to the US."

Game Box: By press time, Sony was showing a 400-MIPS (yup, 400) game box to select analysts. This monster is Sony's long-awaited competitor in the CD-ROM-based game world, and it has Mario and Sonic more than a little rattled. Sony plans to release the product in the US in 1995. One industry executive who has seen it calls it "the hottest game box I've ever seen." No word yet on peripherals or software compatibility with NES, Sega, 3D0, or Atari software. However, Sony lacks infrastructure for developer support, compared with Sega's and Nintendo's well-oiled machines.

Luxury Labs: Sony several years ago set up the Research Center in Tokyo under the direction of Dr. Toshitada Doi. The Sony facility is famous among those in the Japanese research community for its size and the lavish fittings in the offices. Twenty research fellows and their support staffs work on building the future. Two areas of concentration: ubiquitous computing and speech-based computing with computer-generated interface that mimics the human face. What they are building now, the buzz in Japan goes, we will be buying in five years. Remember Apple's "knowledge navigator" video? At Sony's luxury labs, it's passé.

– Joe Flower with David Henry Goodstein

V E N T

**For Stephen Peart,
it isn't look and feel, it's touch and feel.**

What do neoprene and video telephones have in common? Interface. That concept links the various projects of Stephen Peart and his Campbell, California, design firm. Vent Design brought you O'Neill's Animal wet suit and Apple's Adjustable Keyboard, among other innovations.

"People touching and feeling technology" is what Peart says turns him on. The Animal bendable wet suit represented the "packaging" of a human: an interface with the ocean. The easy-on-the-hands keyboard for Apple started as a series of experiments, but when people picked it up they all wanted one.

Along with work on interface designs for Sun's tight-lipped startup, FirstPerson Inc. – "a kind of porthole into virtual reality" – Peart is exploring video telephony. Many of his projects at Vent are set up just to test ideas. "I'm a kind of Luddite," Peart says, "even though I love technology and I could finger chips all day long, I try to keep my distance because I have to remain a user, not a technophile." Too many things, he thinks, are designed by technophiles for technophiles.

His latest creations include the "Surf" series of office accessories for The Knoll Group, a furniture maker known for hiring the best designers. In his mouse pads, wrist rests, and foot- and backrests, Peart has taken functional biomorphic shapes – resembling puddles that might have collected under a wet-suited surfer like Peart – and rendered them in various kinds of rubber. They soften the edges of furniture and equipment.

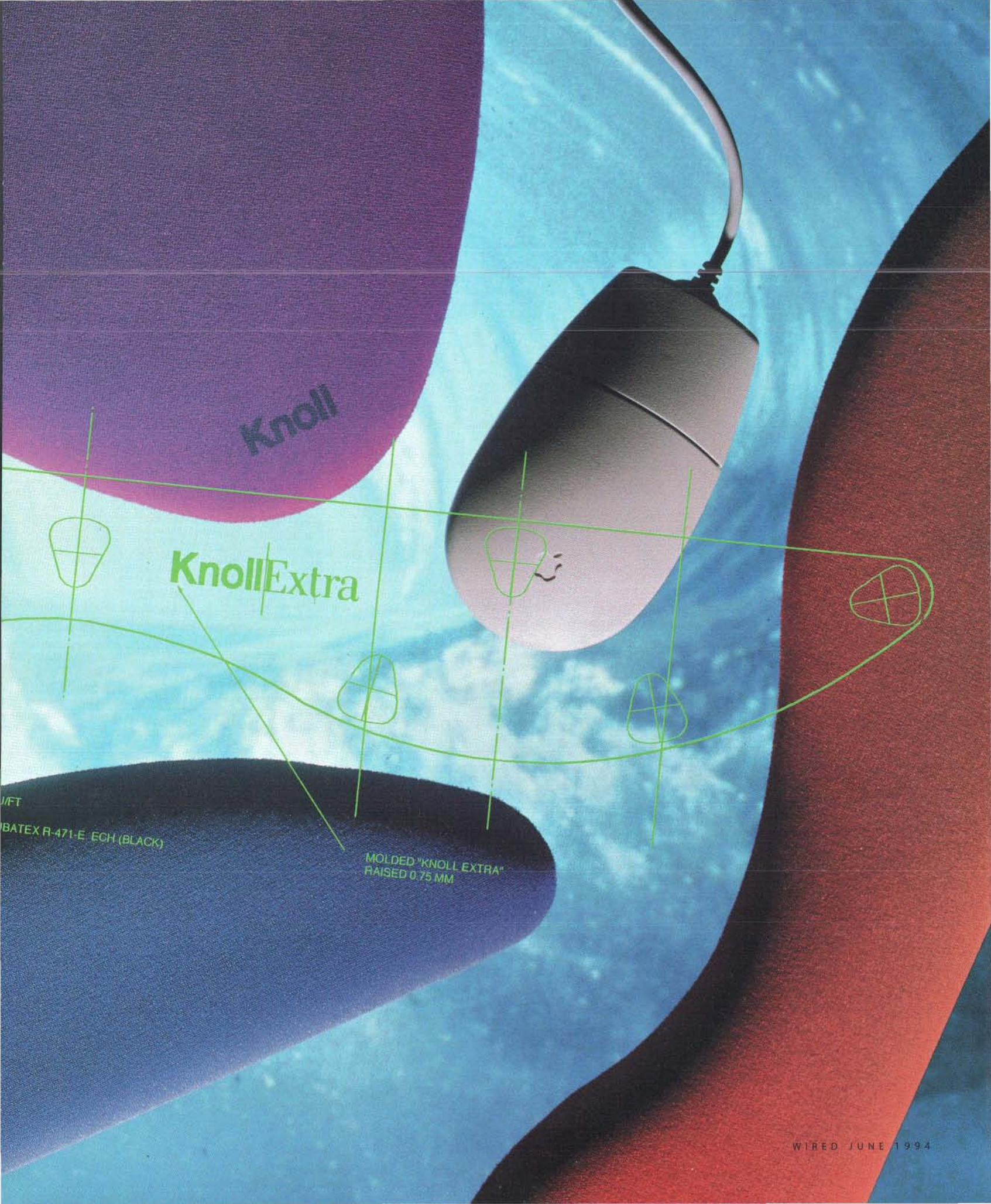
The backrest is unlike anything you've ever seen: a pad of inch-thick rubber that varies its shape with the heat and pressure of your weight, with an attached, heavy crescent of metal that gets tossed over the back of your chair as an anchor.

But why Vent? "One guy joked that it stood for Very Exotic New Technology," Peart says, "but I've also had it pointed out that the word can mean what comes out of the rear end of animal."

Yet a serious idea rests in the root of the word: Peart and his designers aim to vent the capabilities and ideas of organizations hobbled by their own size. "Big corporations are like supertankers; they move very slowly," Peart says. Vent, he adds, is the pilot who comes on board to make the turns easier.

Vent Design: +1 (408) 559-4015. – Phil Patton

Phil Patton (pattonp@aol.com) is a frequent contributor to Wired.



Knoll

Knoll Extra

U/FT
BATEX R-471-E ECH (BLACK)

MOLDED "KNOLL EXTRA"
RAISED 0.75 MM

With all the enthusiasm of Baptist ministers turning their Sunday pulpits over to the Devil, the editors of *Wired* have offered me the opportunity to respond to some of the urban folklore that has grown up around key escrow encryption – also known as the Clipper Chip.

Recently the Clinton administration has announced that federal agencies will be able to buy a new kind of encryption hardware that is sixteen million times stronger than the existing federal standard known as DES. But this new potency comes with a caveat. If one of these new encryption devices is used, for example, to encode a phone conversation that is subject to a lawful government wiretap, the government can get access to that device's encryption keys. Separate parts of each key are held by two independent "escrow agents," who will release keys only to authorized agencies under safeguards approved by the attorney general. Private use of the new encryption hardware is welcome but not required. That's a pretty modest proposal. Its critics, though, have generated at least seven myths about key escrow encryption that deserve answers.

Myth Number One: Key escrow encryption will create a brave new world of government intrusion into the privacy of Americans.

Opponents of key escrow encryption usually begin by talking about government invading the privacy of American citizens. None of us likes the idea of the government intruding willy-nilly on communications that are meant to be private.

But the key escrow proposal is not about increasing government's authority to invade the privacy of its citizens. All that key escrow does is preserve the government's current ability to conduct wiretaps under existing authorities. Even if key escrow were the only form of encryption available, the world would look only a little different from the one we live in now.

In fact, it's the proponents of widespread unbreakable encryption who want to create a brave new world, one in which all of us – crooks included – have a guarantee that the government can't tap our phones. Yet these proponents have done nothing to show us that the new world they seek will really be a better one.

In fact, even a civil libertarian might prefer a world where wiretaps are possible. If we want to catch and convict the leaders of criminal organizations, there are usually only two good ways to do it. We can "turn" a gang member – get him to testify against his leaders. Or we can wiretap the leaders as they plan the crime.

I once did a human rights report on the criminal justice system in El Salvador. I didn't expect the Salvadorans to teach me much about human rights. But I learned that, unlike the US, El Salvador greatly restricts the testimony of "turned" co-conspirators. Why? Because the co-conspirator is usually "turned" either by a threat of mistreatment or by an offer to reduce his punishment. Either way, the process raises moral questions – and creates an incentive for false accusations.

Wiretaps have no such potential for coercive use. The defendant is

convicted or freed on the basis of his own, unarguable words.

In addition, the world will be a safer place if criminals cannot take advantage of a ubiquitous, standardized encryption infrastructure that is immune from any conceivable law enforcement wiretap. Even if you're worried about illegal government taps, key escrow reinforces the existing requirement that every wiretap and every decryption must be lawfully authorized. The key escrow system means that proof of authority to tap must be certified and audited, so that illegal wiretapping by a rogue prosecutor or police officer is, as a practical matter, impossible.

Myth Number Two:

Unreadable encryption is the key to our future liberty.

Of course there are people who aren't prepared to trust the escrow agents, or the courts that issue warrants, or the officials who oversee the system, or anybody else for that matter. Rather than rely on laws to protect us, they say, let's make wiretapping impossible; then we'll be safe no matter who gets elected.

This sort of reasoning is the long-delayed revenge of people who couldn't go to Woodstock because they had too much trig homework. It reflects a wide – and kind of endearing – streak of romantic high-tech anarchism that crops up throughout the computer world.

The problem with all this romanticism is that its most likely beneficiaries are predators.

Take for example the campaign to distribute PGP ("Pretty Good Privacy") encryption on the Internet. Some argue that widespread availability of this encryption will help Latvian freedom fighters today and American freedom fighters tomorrow. Well, not quite.

Rather, one of the earliest users of PGP was a high-tech pedophile in Santa Clara, California.

He used PGP to encrypt files that, police suspect, include a diary of his contacts with susceptible young boys using computer bulletin boards all over the country. "What really bothers me," says Detective Brian Kennedy of the Sacramento, California, Sheriff's Department, "is that there could be kids out there who need help badly, but thanks to this encryption, we'll never reach them."

If unescrowed encryption becomes ubiquitous, there will be many more stories like this. We can't afford as a society to protect pedophiles and criminals today just to keep alive the far-fetched notion that some future tyrant will be brought down by guerrillas wearing bandoleers and pocket protectors and sending PGP-encrypted messages to each other across cyberspace.

Myth Number Three:

Encryption is the key to preserving privacy in a digital world.

Even people who don't believe that they are likely to be part of future resistance movements have nonetheless been persuaded that encryption is the key to preserving privacy in a networked, wireless world, and that we need strong encryption for this reason. This isn't completely wrong, but it is not an argument against Clipper.

If you want to keep your neighbors from listening in on your cordless phone, if you want to keep unscrupulous competitors from stealing your secrets, even if you want to keep foreign governments from knowing your business plans, key escrow encryption will provide all

DON'T
WORRY

BE
HAPPY

WHY CLIPPER IS GOOD FOR YOU

By Stewart A. Baker,
Chief Counsel for the NSA
A *Wired* Exclusive

Stewart A. Baker is the National Security Agency's top lawyer. He worked briefly as Deputy General Counsel of the Education Department under President Jimmy Carter, and he practiced international law at Steptoe & Johnson, in Washington, DC. He has been at the NSA since 1992.



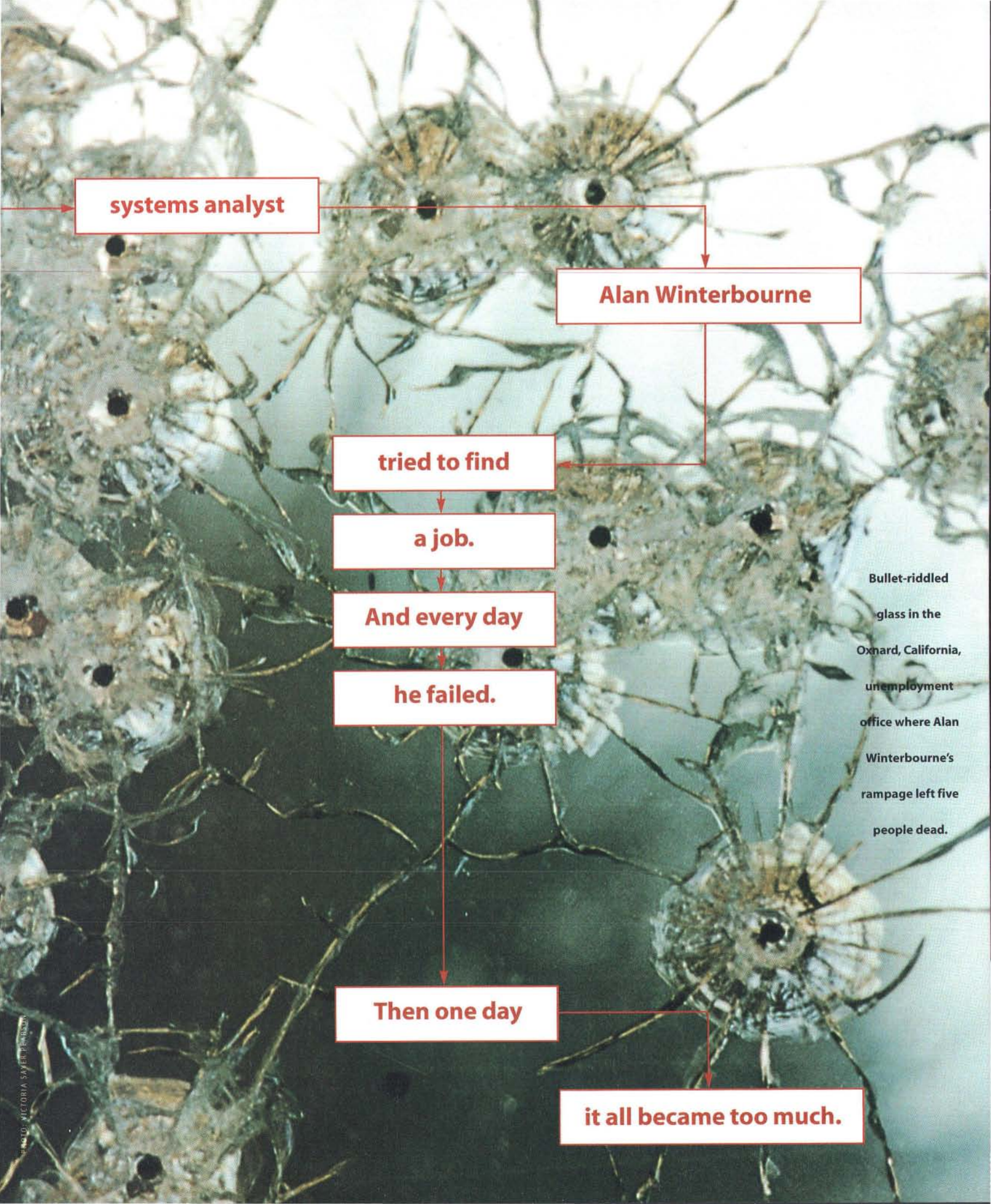


Every day

for eight years,

RAGE

By Mark Nollinger



systems analyst

Alan Winterbourne

tried to find

a job.

And every day

he failed.

Then one day

it all became too much.

Bullet-riddled
glass in the
Oxnard, California,
unemployment
office where Alan
Winterbourne's
rampage left five
people dead.

At 11:15 on the morning of December 2, 1993, Alan Winterbourne, a 33-year-old computer engineer, appeared in the lobby of the *Star-Free Press* in Ventura, California, a placid coastal town about 60 miles north of Los Angeles. Winterbourne was a husky six-footer dressed in a dark sport coat, gray slacks, a white shirt and clip-on tie, with long brown hair flowing past his shoulders and a scraggly beard reaching his chest. He asked for opinion page editor Timm Herdt. He handed Herdt a Manila envelope he said contained some documents relating to unemployment and asked the editor to look them over at his leisure – he would call back later to discuss them. Winterbourne then politely thanked Herdt for his time, turned, and left. Herdt put the envelope aside, unopened, and went back to work.

Winterbourne drove ten minutes south to the neighboring city of Oxnard, then parked his tan 1978 Dodge Aspen on a residential street near the state Employment Development Department. In the lobby of the nondescript, one-story building, about fifty people, some of them mothers with young children, waited for their turn to be called. Three dozen or so EDD employees busied themselves with their work behind the service counter.

At 11:41, Winterbourne walked through the main entrance. Without a word, he stepped up to the service counter, pulled a .12 gauge shotgun from under his jacket and opened fire on the state workers.

Employees and clients hit the floor, scrambling across the linoleum in a frantic search for cover. Ignoring the unemployed, Winterbourne sprayed the office floor with random shotgun blasts aimed at EDD workers. A computer terminal exploded, and 65-year-old Richard Bateman, a retired businessman who was

visiting the agency on behalf of a nonprofit group that helped disabled adults find work, fell to the floor in convulsions.

Phillip Villegas, 43, a clerk with a ready smile who had started at the unemployment office as a volunteer, turned to flee. A shell slammed into his back, knocking him to the ground.

Kicking open a gate, Winterbourne entered the work area, where those employees who had not barricaded themselves in offices tried to hide under their desks. He marched up and down the aisles in silence: firing, reloading, and firing again. As Bateman groaned in pain, Winterbourne finished him off with two more blasts to the upper body. He shot Anna Velasco in the hip – the popular 42-year-old worker had spent the prior evening translating a healing mass for her church's Spanish-speaking congregation – then fired a second round into her chest from close range as she cowered under her desk. When the shotgun jammed, he drew a Smith & Wesson Classic .44 magnum revolver and kept shooting at the others.

Mark Nollinger is a freelance writer based in Ventura, California.

Suddenly, Winterbourne stopped. He leapt over the counter, stuck the pistol into his waistband, calmly straightened his jacket, and walked out a side door. Three workers – Anna Velasco, Richard Bateman, and Phillip Villegas – lay dying. Four others were wounded. Alan Winterbourne had never met any of them.

Outside, Winterbourne ran into four police officers arriving on the scene. They exchanged gunfire as he sprinted across the street to his car. Winterbourne sped off through an unincorporated green belt of lemon groves and produce farms between Ventura and Oxnard, only to get stuck in traffic at the corner of Victoria Avenue and Olivas Park Road. Sgt. James O'Brien, 35, a decorated Oxnard detective and the father of two young children, skidded to a stop about 200 feet away and took cover behind the open door of his unmarked police cruiser. Winterbourne leapt out of the Dodge, a Browning .500 deer-hunting rifle in hand. Peering through the scope, he aimed at O'Brien's car and started shooting. One



**He was 25 years old,
clean-cut, and**

**thrilled with the
prospect of
beginning his**

**career as a
systems engineer at
one of the country's
leading**

aerospace firms.

**Alan's performance
was rated very good
in three categories and
good in the other two.**

bullet smashed through a police spotlight and struck O'Brien in the head, killing him instantly.

Fearing for the safety of the other motorists, the police held their fire. Winterbourne jumped back into his car and roared into the outskirts of Ventura. In a new development of concrete office parks and squat warehouses, he turned into the parking lot of the Ventura unemployment office. Half a dozen police cars followed, blocking driveways and taking position for a final standoff. When Winterbourne emerged from his car brandishing yet another rifle, a Ruger Mini-14 with a fresh 30-round clip, the officers cut him down in hail of gunfire.

Police handcuffed the body. The worst shooting spree in the history of Ventura County was over. Five people, including Winterbourne, died in less than twenty minutes.

At the *Star-Free Press*, Timm Herdt had been listening to the chase on the police radio when the receptionist approached and asked him what he wanted to do with the box his visitor left in the lobby. Puzzled, Herdt went out to take a look. He was startled by what he found inside the

heavy cardboard container. Racing to his office, he tore open the manila envelope. Suddenly, it all clicked. Herdt grabbed his managing editor. "Listen, I think I know what's going on..."

Mass murders – generally defined as four or more deaths resulting from a spasm of violence in one location – occur, on average, about twice a month in this country. The killers are generally white, middle-aged males, who blame others for the frustration in their lives. Often that frustration has to do with unemployment – in an increasingly fragmented, career-driven society, being jobless can destroy a person's sense of identity. "No other technique for the conduct of life attaches the individual so firmly to reality as laying emphasis on work," wrote Sigmund Freud in *Civilization and Its Discontents*, "for his work at least gives him a secure place in a portion of reality, in the human community." The materials Winterbourne left at the office of the *Star-Free Press* includ-

Even
his grooming became a
matter of principle.

Alan decided
to let his hair
and beard
grow to mark
the time that
he had been

without work. He
resolved to cut his hair
only after he received
his first paycheck.

ed not one suicide note, but hundreds, leading to a single devastating conclusion: Alan Winterbourne, a computer specialist trained at a top defense contractor, couldn't get a job to save his life.

The manila envelope contained a set of documents relating to Winterbourne's brief experience as a computer systems engineer for the Northrop Corporation right out of college in 1985. Included were a pair of job performance reviews, a letter of resignation, a copy of a Department of Defense document listing penalties for violating a security oath, a letter to his congressman alleging illegal activities at the company and threats on his life, and the transcript of an appeal of his subsequent denial of unemployment benefits.

It was the last job he ever had. The cardboard box, a monument to tenacious effort and relentless defeat, was stuffed to the brim with want ads, job applications and rejection letters from nearly 300 different companies. Placed atop the papers was a small notebook, the words "At least one contact a day, five days a week, 2/14/86-12/2/93" written on the cover. Its pages were filled with a record of more than 2,000 job contacts.

Winterbourne's decision to vent his frustrations by shooting innocent people is a mechanism that will never be understood – it's most likely something even he would be unable to explain, were he still alive. But how did he arrive at that terrible place? All he wanted was the opportunity to pursue a career, doing the work he had been trained to do.

Why couldn't Alan Winterbourne get a job?

Following the shootings, the *Los Angeles Times* printed letters from readers sympathizing with Winterbourne as the victim of an impersonal bureaucracy and a heartless economy. But he was a computer engineer, one of the fastest growing occupations in the country. According to the US Department of Labor, the number of jobs in the field has doubled since 1985 and is projected to do so again by the year 2005. Even in Southern California, battered by recession and a shrinking defense industry, demand for computer systems analysts is so strong that *Money* magazine named the Ventura-Oxnard area one of the top 50 job markets in 1993.



When Alan Douglas Winterbourne was 10 years old, Patricia Osborne, a family friend who was studying palmistry, gazed into the boy's hands and was struck by the presence of an unusual line. "I looked it up in the book," she recalls. "It said that someone with that mark goes down a path like a horse with blinders on, so he best be put on a good path."

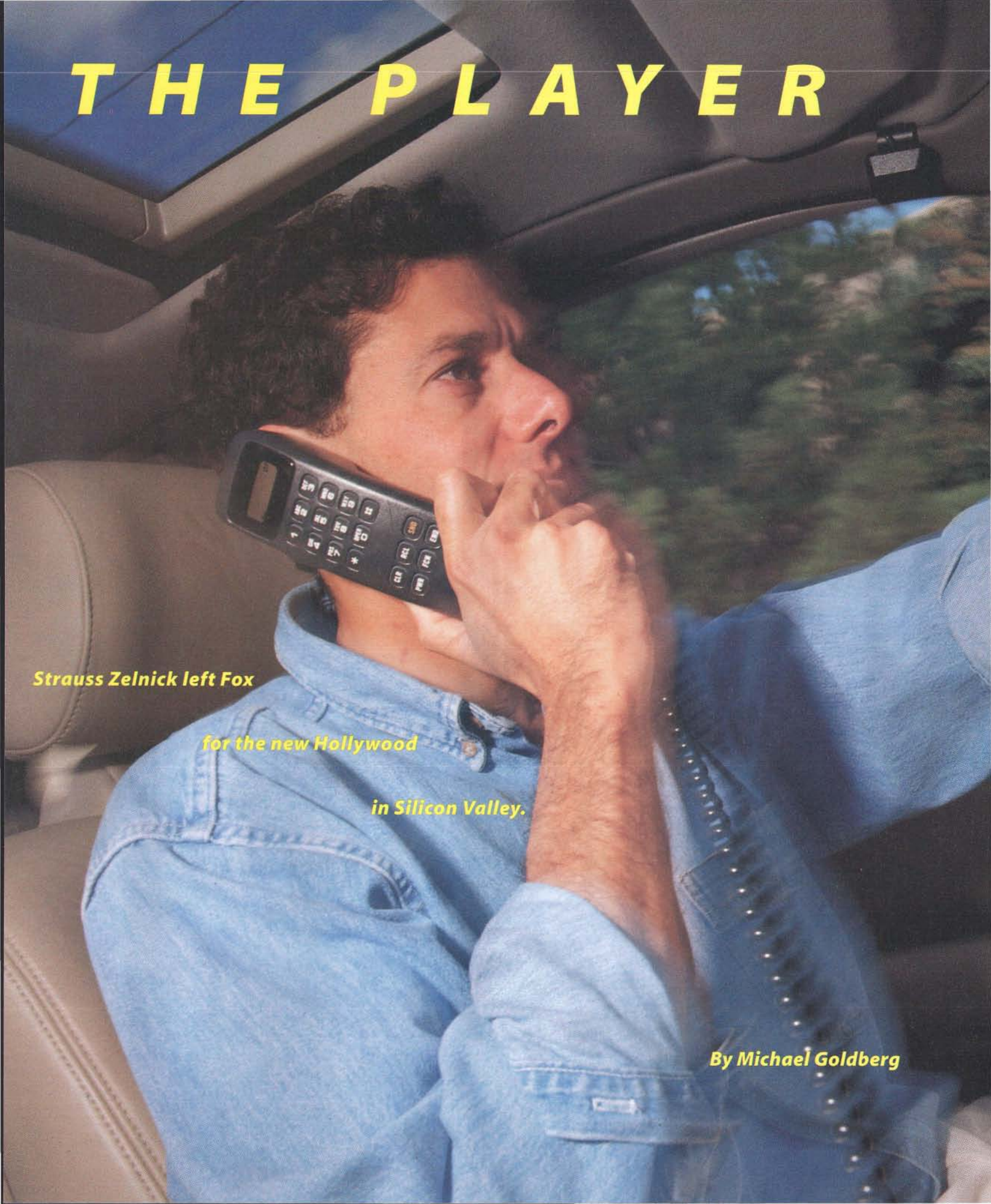
It would prove to be an eerily prescient observation. But there was little in Alan's early life that suggested any cause for alarm. Described as a shy, sweet, sensitive boy, he was the second child of Bill Winterbourne, who taught ceramics at the local college, and Ila Winterbourne, a music teacher who managed the Ventura County Symphony for a number of years.

The Winterbourne children grew up in a modest but comfortable home in a quiet Ventura tract of stucco and wood bungalows, where Ila, a staunch Lutheran, instilled them with the values of her faith. "We were brought up to have respect for everybody," says Carol Lockart, Alan's older sister, who is a flutist in the symphony her mother used to manage. "Not just for human beings, but for every living thing. We were taught to be good to people."

The kids were also encouraged to explore their creativity. But while Alan occasionally pounded a drum set and learned how to throw pots in his father's studio, he wasn't as interested in artistic pursuits as the rest of his family. "He didn't want to compete with Carol or Dad," says Ila, a plain-spoken woman with short gray hair. "He'd say, 'I'm gonna be myself.'" Alan applied his imagination to technology. He discovered ham radio as a teenager and spent hours in the garage, fiddling with the dials. By the time he was a senior at Ventura High, he decided that he would become an electronic engineer.

In 1978, Alan began his studies at California Polytechnic 136 ►

THE PLAYER

A man with dark, curly hair is sitting in the driver's seat of a car. He is wearing a light blue denim shirt and is holding a black flip phone to his ear with his right hand. He is looking out the window with a thoughtful expression. The background outside the car shows green trees and foliage. The interior of the car, including the headrest and dashboard, is visible.

Strauss Zelnick left Fox

for the new Hollywood

in Silicon Valley.

By Michael Goldberg

Wired: What made you leave the presidency of a major studio to run a game company?

Zelnick: At the same time that I had the desire to be a studio head, I always had the desire to work for myself. I ran studios for seven years. And it became clear to me as time went on, with all the consolidation in the motion picture business, and given the basic maturity of the motion picture business, that I probably wouldn't be a studio head and work for myself.

But why games?

One morning – it was actually the day of the Academy Awards last year – I said to my wife as I was shaving, "It's the video game business!" Because it has all of the economics and all of the growth potential of the movie business in its early days,

and therefore it has the margins of that business from its early days. There's an opportunity to be an entrepreneur, and yet it's a creative enterprise.

Later in the day we were in the limousine on the way to the Academy Awards and I get a phone call from my office patched through from Bob Fell. He said, "I'm on the board of a game company called Crystal Dynamics. We're looking for a CEO. Do you know anyone who might be interested?" End of story.

The financial opportunity was appealing?
I wouldn't be here otherwise.

Were you a gamer before you got here?

No. My advanced age group missed the video game revolution. I'm getting to be more of a gamer.

Are game companies the new movie studios?

What we do day to day is similar to what a movie studio does: create and find terrific entertainment ideas and then turn those into reality, produce them, and distribute them. And that's what a studio does. Having said that, we execute in a very different way. We do most of our work on computers, and our business is still evolving very rapidly on the technical side, which is not true of the movie business.

What do you think about basing video games on movies?

If you're going to make a video game based on a successful movie, you probably want to release the game at the launch of the film. To do that you have to start the game approximately when you start to shoot the movie. So you're making the game well in advance of knowing if the film is a hit. A good studio's hit ratio is 25 to 30 percent – that is, 25 to 30 percent of the release schedule makes good money. A good game company's hit ratio is on the order of 40 or 50 percent right now. Take the high end, take 50 percent. Take the high end for movies, take 30 percent. You've got to multiply the

Michael Goldberg (theinsider@aol.com) is a contributing editor at Rolling Stone.

two together. Because if you have a flop movie and a good game it's not going to work. Or if you have a bad game and a good movie it's not going to work. So you now have a 15-percent chance of a hit game. What that tells you is that you've taken your odds from an average 40 to 50 percent down to 15 percent. Plus you paid a lot of money for the license. That's not very good business.

Are we going to be downloading games to our set-top boxes in the near future? And will that eliminate the need to sell cartridges and CDs?

You can't really point to a time in the entertainment business when a new distribution option completely cannibalized a pre-existing distribution option. You can point to times, many times, when new distribution media have expanded the overall market. It's a typical knee-jerk reaction to say, "Oh, my God, this new medium is going to kill the existing medium." In fact, real revenues for the movie business went up 350 percent between 1972 and 1992. So I think online distribution of games will happen and will be a significant net benefit to game producers.

When will that happen?

There are about 110 tests going on now. Commercial reality? I think we're three to five years away.

Are we going to see more movie and TV stars in games?

You need a creative idea that really makes use of the live action and the characters in a way that's compelling. If you can sort that out, we'll see more and more of it. But that's a big if. And the computer is a powerful tool for creating lifelike images. *Jurassic Park* showed us that. It would seem a shame if, after the movie business embraced computer-generated animation and made it look real, we were unable to use the computer to create realistic images. But over time this discussion will be completely anachronistic. Because the line between what is linear footage and what is computer-generated animation is going to become so thin that there will eventually come a point where you won't be able to tell the difference. And what that means in turn is that we'll be able to create very lifelike digital actors. Now will they replace existing actors? Of course not. But will we be able to create them and make them look real? Yes. If you can create a dinosaur that looks real, you can create a human being that looks real.

A lot of parents are upset about their kids playing video games.

Sounds like parents' reaction to rock and roll in 1958. (Laughs.) You know, kids survived the jazz age, kids survived rock and roll, kids survived television. They're gonna survive video games.

In the near future will one be able to put a facsimile of oneself into an action/adventure scenario?

Technically, that's feasible. Is it compelling? I'm not sure there's a burning need among consumers to put a model of themselves in an action movie. I think consumers pay lots of money to see Arnold Schwarzenegger in an action movie.

How do you find the young new talent?

They tend to start in the testing department and then work their way up. (Laughs.) In the movie business you start in the mail room; in the game business you start in the testing department. ■ ■ ■

Last year Strauss Zelnick surprised Hollywood when he gave up his position as president and CEO at Twentieth Century Fox to head a small Silicon Valley-based video game start-up, Crystal Dynamics. Under Zelnick, the company has released three titles for the 3DO platform: *Crash 'N Burn*, *Total Eclipse*, and *The Horde*, which uses Hollywood actors, including Kirk Cameron, star of ABC's *Growing Pains*.

JUMP™

THE DAVID BOWIE INTERACTIVE CD-ROM™

Buying an interactive
music title
no longer requires
a leap of faith.



Urotsukidōji: Legend of the Overfiend

The people who complain about how Japan stole American ideas, improved them, and then sold them back to us now have more to whine about. The Japanese jumped on animated cartoons and took them way over the top while American animation houses were still hammering out the intricacies of *Deputy Dawg* and *Mighty Mouse*.

Straight out of the violence-and-libido-heavy world of *manga* (comic books), Japanese animation sets the not-necessarily-psychologically-healthy standard when it comes to slamming eye-popping images and undigested sexual fantasies up on the screen.

The plot of *Urotsukidōji: Legend of the Overfiend* is basic, a simple engine to move the characters around: Every 3,000 years the Overfiend tries to unite the three cosmic dimensions: Humans, Man Beasts, and Demons. Now the Overfiend wants to destroy them, bringing the entire universe to an end. The only one



A melange of fiction, fantasy, horror, and soft-core porn.

who can stop him is a half-human, half-magical teenager who looks like a cross between an alley cat and a high school football team towel boy. Got that?

Like much Japanese adult animation, *Urotsukidōji* is a party mix of images and ideas lifted from science fiction, fantasy, horror movies, and soft-core porn. The fix you get in this video is not the story, but the way the story is told: through the eyes of desperately horny teeny-boppers and super beings. The film is full of skyscraper-sized demons (brandishing their genitals like Tomahawk missiles), bizarre landscapes, and transdimensional beasts bursting from the skins of alluring humans. A half-hour of *Urotsukidōji* would have Freud on the carpet, gibbering like an electro-shocked baboon. For the truly damaged, note that *Urotsukidōji: Legend of the Overfiend* is an English-language-dubbed, 90-minute version of a more elaborate telling of the Overfiend story that is more than six hours long (also available from Central Park Media). It uses subtitles and is not dubbed. It is also uncut, so all the most gruesome violence and sexual details are left moistly intact. — Richard Kadrey

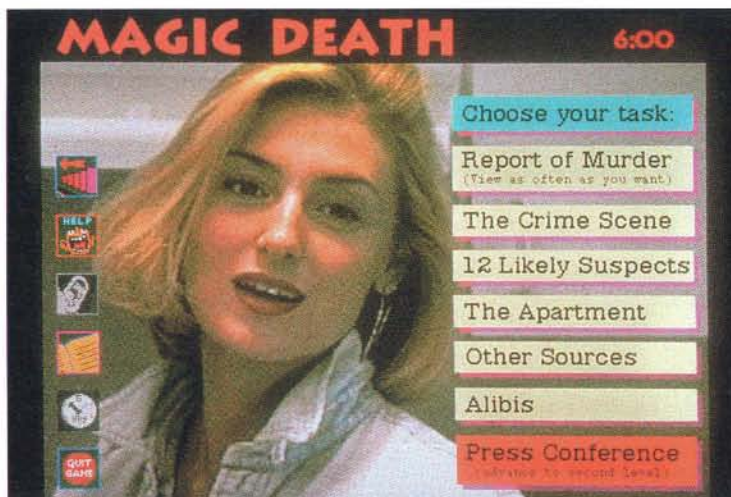
Urotsukidōji: Legend of the Overfiend: US\$39.95. Central Park Media: (800) 626 4277, +1(212) 977 7456.

The Magic Death

Few CD games offer as smoothly polished an experience as Shannon Gilligan's *Who Killed Elspeth Haskard? The Magic Death*, the second game in a series. Yet it was produced for a small fraction of the megabucks being poured into high-profile projects by the big players.

You play a Chicago detective investigating the murder of a brilliant and beautiful grad student specialist in *Voudoun* religious practices. She's been found killed with toad skin poison, smeared with mud and chicken blood, surrounded by weird symbols, apparently having undergone a "zombification ceremony."

Consulting experts on Haitian religious practice is one of many ways to track down the murderer. You can also make a detailed examination of the crime scene, read the autopsy, send evidence to the forensic lab, listen to the victim's phone messages, even read her diary. Your trusty assistant Lucie has already slogged through the routine stuff and stands ready to steer you to the most important information. The core of the investigation is the interviews with twelve suspects, most of



Most of the twelve suspects seem to have wanted poor Elspeth dead.

whom seem to have a plausible motive for wishing poor Elspeth dead.

You have only six game-hours before your chief takes you off the case. The design is nicely structured to facilitate the process of deduction with a minimum of interface folderol and to get you through a complete game (successful or not) in an hour or so. Incidental sound is used particularly well — the inevitable pauses for loading data from the CD are neatly covered with the ticking of a clock.

There are a few awkward aspects to game mechanics. Though you can save a position to continue play later on, you can't do so without leaving the game entirely. Before naming a suspect you must suffer through a "press conference," where questions can stray into the truly trivial. Though three scenarios lead to three different murderers, clues vary only minutely between versions, so you find yourself covering long stretches of the same ground in the hunt for subtle differences.

Three more titles are currently in development. This series amply proves the rich potential of the mystery genre in the interactive medium. It also proves that sophisticated multimedia entertainment can be put together on a reasonable budget. — Jim Gasperini

Who Killed Elspeth Haskard? The Magic Death: US\$69.99. Creative Multimedia: (800) 262 7668, +1 (503) 241 4351.





Whaling on America OnLine

With cheap monthly access and a graphical interface, America Online (AOL) is growing in popularity. For many users, AOL offers an inexpensive way to handle virtually unlimited e-mail. I say offers because I can't resist reading my mail online, while the meter runs. It's simply more convenient to do it that way, instead of manually downloading each message to a text file.

Then I discovered *Whale Express*, an easy-to-learn script system that runs small programs to automate AOL tasks, such as caching mail. Now I have my Windows system automatically log on to my AOL account every morning and



There's hope for AOL.

dump all of my mail into one file. Later I can read the messages at my leisure and not have to worry about them being deleted by the AOL weekly message destroyer.

Other possibilities include automatically checking to see if anyone on your list of buds is online or automatically recording an online conference that you won't be around for — a VCR for cyberspace!

A shareware version of *Whale Express* is available for free on AOL in the PC Development Forum. The registered version includes added features, updates, and support.

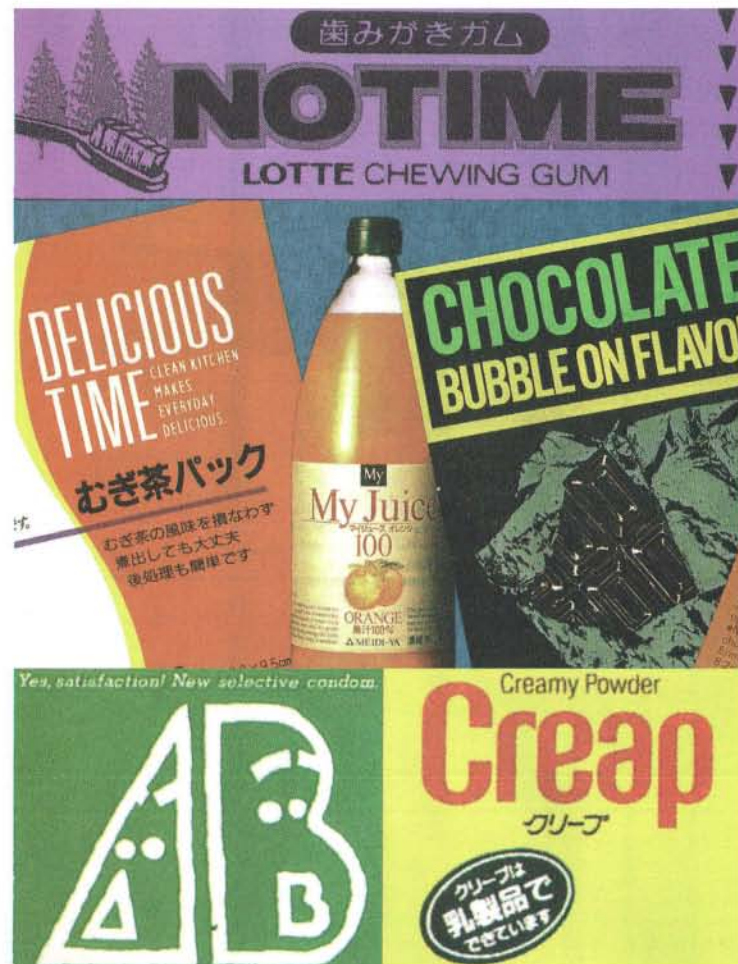
—Seth Kaplan

Whale Express: US\$29.95.
Tartan Software: 143 Hortsmann Drive, Scotia, NY 12302.

Japanese Jive

Japanese Jive is a collection of photos of Japanese products, with bits of information and silly, occasionally sneering, commentary. Most of the products in *Japanese Jive* have English-language names, but the words are used in such mysterious combinations that their meaning is obliterated (much like the English found written across Japanese T-shirts). What do you suppose food products such as "Fish Ham" and "Black Black" really are?

Some of the products, however, reveal interesting sides of Japanese culture. For instance, many Japanese believe your blood type deter-



A condom to match your blood type and "bubble-on" flavor for your chocolate.

mines your personality; appropriately, in Japan you can get a condom that matches your blood type (sometimes it's best not to ask why...). You can also purchase "Nipples," a kind of tape that hides those pesky protruding nipples. "Eye Talk" is perhaps the most disturbing product mentioned; it's an eyelid glue to give Japanese eyes a rounder, more Western look.

Japanese Jive is not only interesting as a glimpse of a foreign consumer culture rife with English influence, it's a reminder that merely knowing the words of another language is a far cry from really understanding it. —Richard Kadrey

Japanese Jive, by Caroline McKeldin, US\$9.95. Weatherhill Inc.: (800) 437 7840, +1 (203) 459 5086.

Double Vision

One of the most difficult jobs in many laboratories is spending the day peering into a binocular microscope. After the first few hours, the back goes. By the end of the day, the migraines start. "The elbow that I lean on hurts all the time, and my eyelids have these little twitches that won't go away," says one frazzled biologist.

In recent years, scientists have taken to using video cameras on their monocular microscopes to make viewing easier. But it's not so easy to do with binocular scopes, because you need to somehow combine the two video inputs into a single image.

The Light Advanced Microscope Project, Inc. (LAMP) has the answer: a video imaging system for stereo binocular microscopes based on LCD shutter eyeglasses. LAMP's system includes two proprietary video cameras, a 486 PC, two video frame-grabber boards, a Super VGA video card, a 17-inch non-interlaced RGB monitor, two pairs of the eyeglasses, and a proprietary external black box.

The eyeglasses are equipped with a set of LCD



No. This isn't a 3-D movie.

electronic shutters that open and close in sync with the monitor's 114Hz refresh rate, so that each eye gets 57 full-color frames every second. Thus, a scientist wearing the glasses who looks at the screen sees exactly what she would see if she were to look into the microscope itself — without the accompanying back strain. LAMP hopes to move to wireless, high-contrast, infrared-controlled glasses before the end of the year.

Besides displaying three-dimensional stereo images, LAMP's microscope visualization system can also store hundreds of pictures, send them down a telephone line, or print them on a color printer. The imaging system comes complete with an image database management system that includes necessities like the JPEG compression standard and support for e-mailing images anywhere in the world.

"Sounds super," says the back-achy biologist. "I bet any lab with a Howard Hughes grant could get four or five of them." —Simson L. Garfinkel

Data-LAMP MR-1B Stereoscopic Video Imaging System: US\$20,000 to \$25,000. LAMP: +1 (607) 256 2071.

Island Fun

Hawaii High: *The Mystery of the Tiki* is a neat CD-ROM mystery game especially recommended for girls. To a 9-year-old girl like me, it seems like most computer games are made for boys – *Mortal Kombat*, for example, Hawaii High stars a girl from New York, named Jennifer, who visits Hawaii and takes us along on her adventures. And the illustrator, Trina Robbins, makes it look like a comic book.

First we see a map of Hawaii. I click the mouse whenever there is something I want to know about. Be sure to do this because it does some really cool things!

Jennifer meets a new friend, and together they go to the



Gender videogaming.

beach, where they find a stolen Tiki doll. They want to return it to the museum. They go on an adventure through the forest, where they see lots of friendly animals. When they get to the museum grounds, they have a choice of going one way, where they will meet people and play a game, or the other way, where they will enter a maze. If you find the right way out you can return the Tiki. I get to pick out Jennifer's clothes and hear the girls talk like teenagers. I also get to know lots of things about Hawaii and even learn Hawaiian words. – *Mamie Rheingold*

Hawaii High: The Mystery of the Tiki, Mac & PC CD-ROM: US\$39.95, Sanctuary Woods Multimedia Corp.: (800) 872 3518, +1 (415) 578 6340.

Guilt-Free Shooting Spree

Just having a gun in your house raises the probability by a factor of nearly three that someone who lives there will be shot. According to one study, a gun in a home is a lot more likely to be involved in the death of a family member than an intruder. Keeping a gun around to ward off thugs is about as stupid, statistically, as not wearing a seat belt because of the very rare accident where you'd have been better off tossed out of the car. OK, I've heard all this propaganda.

But I love guns. I enjoy the discipline of always being aware of where they're pointed. I crave the look and heft and feel of wood and steel – especially those heavy, precision-milled and precisely turned parts of fine blued metal. I savor the stillness required to fire a gun accurately, the achievement of utter calm at the crucial moment. I appreciate the smell of gun oil, the peaceful evenings waxing the deep finish of a walnut stock, the well-defined sound of the weapon being cocked, the ability to be *here* and affect something *there*.

There is a way to give in to this gun lust without inviting mortal danger – and at the same time own some of the most accurate lead-throwing devices in the world. The best of these guns, if aimed at a given point, will place every shot within .04 of an inch at 10 meters. If someone asks you to shoot a horsefly on a nearby tree, you would be



Airing it out: Just as accurate but it's almost impossible to kill someone.

justified in asking, "In which eye?"

Instead of powder-activated weapons, I'm talking about precision air rifles. These guns are nonlethal: If you were to shoot somebody in the chest at close range, it could certainly raise a welt or make the victim bleed (and there's always the danger of putting someone's eye out), but it would be nearly impossible to kill a person with one.

A far cry from the sheet-metal and plastic Daisy BB guns of yesteryear, these air rifles are testaments to fine workmanship. My favorite, because it is unsurpassed in accuracy and doesn't require air tanks or CO₂ cartridges, is the Feinwerkbau 300S. It is a pleasure to shoot. It is nearly silent, and the whole barrel moves back like a cannon's to absorb the recoil. Models range in price from about US\$1,200 to \$1,400.

My favorite pistol, the nearly dead-silent and spectacularly accurate Feinwerkbau 65Mk II, is a joy to handle (about \$1,100). Visually the most impressive is the hypermodern Feinwerkbau CO₂-operated Model C55. It would look right at home on a cyberfiction set or in a *Batman* movie. It's only .01 inch less accurate than the 65Mk II and can handle a five-shot magazine. It sells for about \$1,600. The more civilized gun shops have them, but a catalogue is also available. – *Jeff Raskin*

Beeman Precision Airguns: (800) 227 2744, +1 (714) 890 4800, fax +1 (714) 890 4808.

Your Own Port on the Net (Cheap)

Owning your own domain on the Internet adds panache to your enterprise – imagine having an automated system to respond to e-mail requests for information about your company. Now's a good time to stake a claim on the Net; if someone else registers your dream domain first, you're out of luck.

The usual way to set up your domain is to pay at least a couple of hundred dollars a month to a local service provider for a connection. For many, this is expensive overkill.

A price-competitive and easy alternative is HoloNet's Personal Domain Name Service, a service you can access with just about any computer and modem. This is the first time I've encountered a network where you get to maintain your own domain so inexpensively (US\$25 sign-up; \$6 monthly fee applied toward your hourly charges; \$2 to \$11.50 per hour depending on the time of day and the geographic location of the incoming phone call). Your domain can be assigned additional users (\$25 each) or can be instructed to accept all messages sent to your domain, regardless of how they are addressed. This



Stake your name. It'll be your domain on HoloNet.

useful feature comes in handy when friends want to receive messages at your domain temporarily.

A combination of services, along with the inexpensive pricing, makes HoloNet quite the cool place. While you're on HoloNet checking your mail, you'll also be able to take advantage of an impressive array of Internet services. Also, one of the surprising advantages of HoloNet is the considerable number of access numbers across the country. And HoloNet will tell you whether the domain name you choose has already been taken. Incidentally, anyone with Internet access can register a domain for free by connecting to hostmaster@internic.net.

There are some limitations: Automated response costs extra and you must log on to get your messages – more expensive connections send messages to your system as they come in. When you exhaust the capabilities of this type of setup, you can upgrade to more advanced connections or take your domain with you to another provider. Once it's recorded at the Internet Registry, it's yours forever. – *Seth Kaplan*

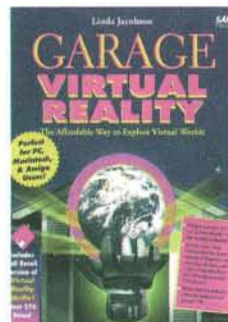
Information Access Technologies Inc.: +1 (510) 704 0160, BBS: vt100, 8N1, +1 (510) 704 1058, e-mail support@holonet.net.



Tinkering with Virtual Worlds

From the early days of telegraph and radio to the Homebrew Computer Club, hobbyists have made significant contributions to technological development. Virtual reality is no exception. The ink was barely dry on the first articles about VR before garage inventors began speculating and experimenting with cheap, funky, PC-based VR.

Linda Jacobson's *Garage Virtual Reality* captures the enthusiasm and insights of the early virtual reality days and maps the course low-end VR has since taken. It presents a neat and tidy introduction to VR (high- and low-end) and covers all the systems and



software available to the home experimenter. It outlines the conceptual steps involved in creating a virtual world, as well as the hardware and software you need to get there. The PC-compatible disk that comes with the book includes a full working version of Virtual Reality Studio 1, a demo version of Vistapro 3, and source code for programming the Power Glove and other devices.

While there is a wealth of information assembled in *Garage VR*, little of it will be new to seasoned VR hackers. But, as a workshop reference and as an entrée for the next generation of developers, it is indispensable.

— Gareth Branwyn

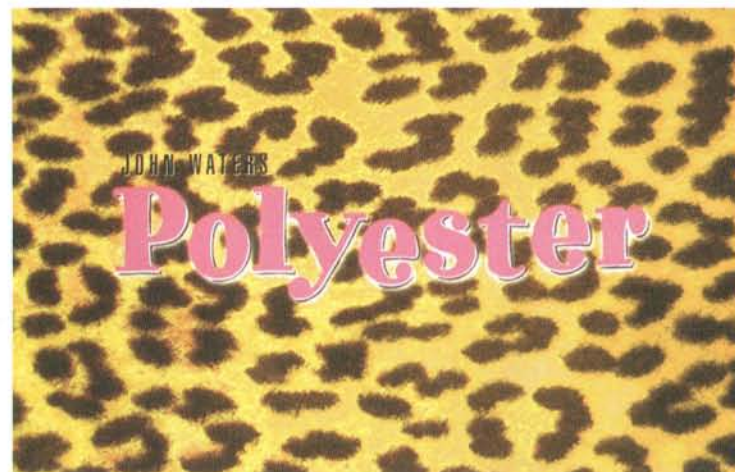
Garage Virtual Reality, by Linda Jacobson, US\$29.95. Sams Publishing: (800) 428 5331, fax +1 (800) 448 3804.

This Movie Stinks

John Waters's films inhabit a strange zone somewhere between porno kitsch, straight-ahead exploitation cinema, and propaganda championing the cause of fringe-culture misfits. He has a streak of Frank Capra, the moralist and champion of the Little Guy, and a lot of the William Castle '50s-style hustler.

Waters's film *Polyester*, now released on laserdisc, brings together all the elements of his different sides. In *Polyester*, the late Divine plays a big and beautiful housewife who is driven to drink and despair by an abusive and adulterous husband, a heavy-metal bad-girl daughter, and a son who is a psycho foot fetishist wanted by the police. Divine, the mom and heroine of the film, is trying desperately to hold her family together, while maintaining something like the *Leave It To Beaver* image she has of family life. Of course she can't do it. Divine is a 300-pound guy in drag. He/she is the eternal optimist but also the eternal outsider, relentlessly stomped on by straight society (including her own mutant version of the nuclear family). Into all this mess, Waters tosses an avaricious mother-in-law and Tab Hunter, the black-and-white TV-era heart-throb who can still make the ladies purr just by smiling.

One element of *Polyester* that shows the real drive-in cinema roots of Waters's style isn't just in the film (or in this case, laserdisc). It's some-



A movie that will live forever: *Polyester* in Odorama.

thing you hold in your hand. *Polyester* uses a '50s-style B-movie gimmick that Waters invented especially for *Polyester*: Odorama. Really, Odorama is just a scratch-and-sniff card with scented numbers that correspond to numbers that appear on the screen. For instance, during the introduction (a scene set in a fake research lab where we are introduced to the wonders of Odorama technology), an allegedly German scientist sniffs a rose. As he does this, the number 1 flashes in the corner of the screen. When you scratch the corresponding number on your Odorama card, you smell a pleasant, rosy scent. Throughout the movie, whenever a character pauses to sniff something a new number flashes, and you can scratch away. Some of the smells are pleasant and innocuous. Some smells ... aren't. Voyager has lovingly reproduced copies of the original Odorama cards for this laserdisc package to give you the total *Polyester* experience. Also included in the package are a special audio track with Waters' commentary on the film and a selection of his briefer works, including his legendary "No Smoking" theatrical short.

So, will Divine survive and find love with hunky Tab? If Number One is roses, can Number Two really be the ghastly body emanation it seemed to be? Only those equipped with Odorama cards know for sure.

— Richard Kadrey

Polyester: US\$49.95. The Voyager Co.: (800) 446 2001, +1 (212) 431 5199.

A Scanner at Your Fingertips

While Microsoft still dreams of bringing Information At Your Fingertips to Windows, Visioneer has already beat them to it.

Visioneer's tiny PaperMax personal scanner weighs barely 2.5 pounds and fits between your keyboard and monitor — scanning is easier than ever. Bridging the gap between hand scanners and flatbeds, the 200 dpi PaperMax is designed primarily for text documents. But its small size belies its capabilities: It can handle everything from business cards up to full legal-sized paper. Just insert the page, in it goes, and after about six seconds your document appears on the MaxMate software, ready for highlighting, annotation and more.

MaxMate links up with your existing communica-



A small-footprint scanner that really works.

tions applications (such as fax, character-recognition, and LAN e-mail software); the result is one-two scanning and sending. Whereas moving paper documents back and forth has always involved a run to the copier, a side-step to the stapler, and then a stop by the mail room, now it takes all of about 30 seconds to scan something in and then drag-and-drop it onto MaxMate's fax icon, e-mail icon, or OCR icon. The software is at the dreaded "1.0" stage of product maturity and could stand some improvement for heavy scanning addicts, but still, the PaperMax is a remarkable gizmo well worth its price.

— Rich Santalesa

PaperMax: US\$499. Visioneer: (800) 787 7007, +1 (415) 493 9599, fax +1 (415) 493 0399, e-mail visioneer@aol.com or 73172.1645@compuserve.com.

NO COPS
NO LAWS
NO WHIMPS

The Software Toolworks®
CD-ROM

For the store nearest you
or to order, call
1-800-234-3088



Choose your vehicle wisely. It may be the only thing that keeps you alive when you battle evil enemies like The Eviscerator and Rabies.



Available on Sega™ CD
and IBM® CD-ROM.
Coming soon to 3DO™



Spectacular fully rendered animation and amazing 3-D graphics make MEGARACE a one-of-a-kind virtual driving experience.



Over 29 minutes of digitized video commentary, 15 full rendered tracks, hot rock music track and the virtual ride of your life (or death).

ARE YOU A GIRLIE-MAN
OR A MEGARACER?

Winning is all that counts in this over-the-edge virtual driving experience. Strap in and hold on for the ride of your life!

MEGARACE™

WIN OR DIE!

Copyright © 1993 The Software Toolworks, Inc. Copyright © 1993 Sega Interactive Entertainment. All rights reserved. IBM is a registered trademark of International Business Machines Corp. 3DO, the 3DO logo and Interactive Multiplayer are trademarks of The 3DO Company. Sega is a trademark of Sega Enterprises, Ltd.



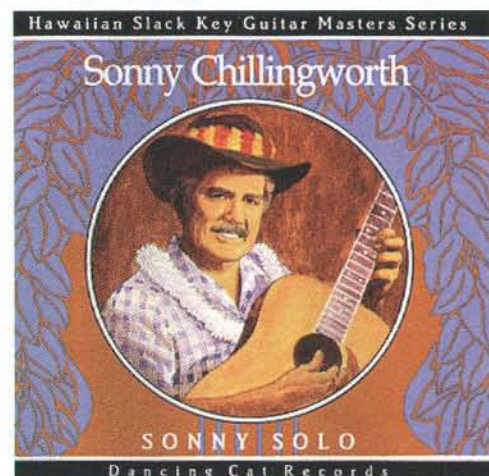
Sonny Chillingworth

Sonny Solo
Dancing Cat Records
Access Code 1266

So you've never heard of a Hawaiian cowboy? Check out Sonny Chillingworth, descendant of a long line of *paniolo*s – the name first coined for Mexicans (or *español*os) who came to island ranches in the 1800s and taught Hawaiians to ride horses, rope cattle, and play guitar. Chillingworth's pedigree shines through in this lyrical collection of island magic.

Chillingworth's true artistry lies in the strings. He is a master of slack key – that is, everything the Hawaiians did to the guitar after it was left in their hands: Strings are loosened into open tunings to match their moods and voices. Gently strumming bass notes, they simultaneously finger-pick nimble melodies.

Then – move over, Leo Kottke – they deliver their licks: rippling arpeggios, bell-like chimes, and (this is



Chillingworth's special trick) a threaded needle dangling from the teeth that dances on the vibrating strings, making them sound like a mandolin or hammered dulcimer.

Chillingworth's luscious voice perfectly suits ancient Hawaiian *mele ho'oipoipo* (love melodies). These soft, romantic poems burst with sensual – often graphic – metaphors that lurk in images of ferns, mountain mists, and the fragrance of tuberose. Chillingworth's "*Pua Lililehua*" ("Sage Blossom") tells of a beloved woman courted by two suitors, one a man, the other a *mo'o* (dragon).

Sonny Solo presents slack key as it was meant to be: up close, unfettered, and in the hands of a *kupuna* (elder) endowed with the wisdom of the ages. Listen for traces of Spain, Portugal, and Nashville. But listen, too, for the echo of Chillingworth's *paniolo* grandfather, who told him: "Son, God gave you ten fingers. Use them to play guitar."

– Constance Hale

16-17

Gyatso
Pathological Records
Access Code 1267

It took four tries and a certain gritting of teeth before I could listen to more than 20 seconds of any of Gyatso's tracks. One of the most agitating works I've encountered, Gyatso's machine-driven beats are unbelievably monotonous, while high-pitched horns grate through every track. Samples are indiscriminately tossed in amongst psychotic guitar riffs. "The Trowlor" offered some respite; for one minute, I felt that I was enjoying a rock track. Kids, if you want to drive your parents insane, this is the one. – Lisa Ferrara



Brian Eno

Instrumental
Virgin
Access Code 1271

Eno has released yet another artful collection of music. This pioneer of what he termed "ambient music" – the forerunner of New Age music and its intellectual and musical superior – has been at it for more than 20 years. Included in this three-CD boxed set is a collection of purely instrumental and mostly electronic (or at least electro-acoustic) music from his entire, innovative career. Alongside some very rare tracks are collaborations with David Bowie, Jon Hassell, and Harold Budd. The ambient created is uniquely Eno. – Dean Suzuki

Bob Berg

Enter the Spirit
Stretch Records
Access Code 1268

Recalling this tenor saxophonist's straight-ahead duets with pianist Bill Dobbins some years back, this release marks a long-anticipated dedication to grooves more traditional than Berg's usual. Gershwin's "I Loves You Porgy" may be the only familiar tune on the album, but the spirit of '60s hard bop is evident throughout this set of well-devised originals. Distinct all-star backing (including pianist Chick Corea and drummer Dennis Chambers) fan Berg's Coltrane-stoked fire. High energy is Berg's bag, and he plays it to the hilt. – James Razzi



Sausage

Riddles Are Abound Tonight
Interscope/Prawn Song
Access Code 1272

Primus head cheese Les Claypool regroups with his original rhythm section to revamp some early tunes under a different name. But forget the details; this is the best Primus album in years. Claypool's bass playing is as punchy as ever, and guitarist Todd Huth is less atmospheric, more grounded in jazz and metal sounds, making guitar and bass wrestle with sinewy glee. Descriptive puns are obvious: Pungent. Smokin'. Fat. If you found the last couple of Primus albums lacking in bite, maybe you need a taste of Sausage.

– Patrick Barber

Renegade Soundwave

Howyoudooin?
Mute Records
Access Code 1269

Life according to Renegade Soundwave revolves around pot smoking, computer games, and a soundtrack that seamlessly blends dub, techno, hip hop, house, and rock. Sequeling a string of underground anthems, The group has delivered a seductive new LP. RSW melds the wildly diverse sounds of English club culture into a unique music that's fresh, startling, and deeply groovy. Chilled-out vocals and quaking bass lines tie the tracks together, from the insanely catchy self-titled single to the spooky porn-king tribute "John Holmes." Mmmmm mmm. – Scott Taves



Seefeel

Quique
Astralwerks Records
Access Code 1273

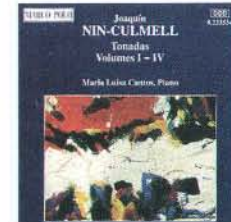
Seefeel's thick compositions bombard the listener with repetition in the hope of tapping into some primal instinct, yet they ultimately fail. Strip away the excessive layers of judicious echo and delay, and each track consists merely of a few chords repeated in loop after relentless loop. A startling homogeneity of tiresome sounds accumulates over a lifeless drum track and the occasional swoop of Sarah Peacock's barely perceptible voice. Put simply, Quique is pretentious tedium. Seefeel shows genre-bending potential but ultimately smothers it under the short-lived novelty of noise processing.

– Stephen Reese

Silica Gel

50) Noisy Children Party
Wifflefist/Seeland
Access Code 1270

If you appreciate Negativland's megasampling musical approach, meet even more mal-adjusted Silica Gel, a band that snips spoken material from sci-fi movie soundtracks, military training films, self-improvement tapes, and news broadcasts; loops them into repetitive shapes; then intersperses hog calls, Pink Floyd, and toothpaste commercials, creating a deliciously mean-spirited slice of Americana. Some cuts run on jackhammer industrial beats; some on sheer layers of words; some, like "Master of the Game," needle unsettlingly under your skin. – Colin Berry



Maria Luisa Cantos, Piano

Joaquin Nin-Culmell:
Tonaladas
Marco Polo Records
Access Code 1274

Cuban-American composer Joaquin Nin-Culmell, brother of Anaïs Nin, studied composition with Paul Dukas and Manuel de Falla and was a professor of music at the University of California at Berkeley from 1950 to 1974. The four volumes of *Tonaladas*, written between 1956 and 1961, consist of 48 brief excursions for solo piano. These exquisite miniatures – arrangements of traditional Spanish songs and dances – retain their ancestral flavor while employing a modern idiom. Cantos plays brilliantly and with impeccable taste throughout.

– Bryan Higgins

Microwave O' The Month



En Vogue – I mean...**Eternal**

Always & Forever

EMI Records

Right. *Always & Forever* *reshaped!* *Always & Forever* *done before!* I loooove songs about codependent women. And dig those glamour shots! This attempt to do what En Vogue did four years ago is *Eternally* awful. Two snaps down! — *Jocelyn Williams*

MUSIC ACCESS

If you'd like to hear excerpts from these discs,

call (900) 454 3277
(95 cents per minute).

When prompted:
Enter Access Code
(under the name
of the artist).

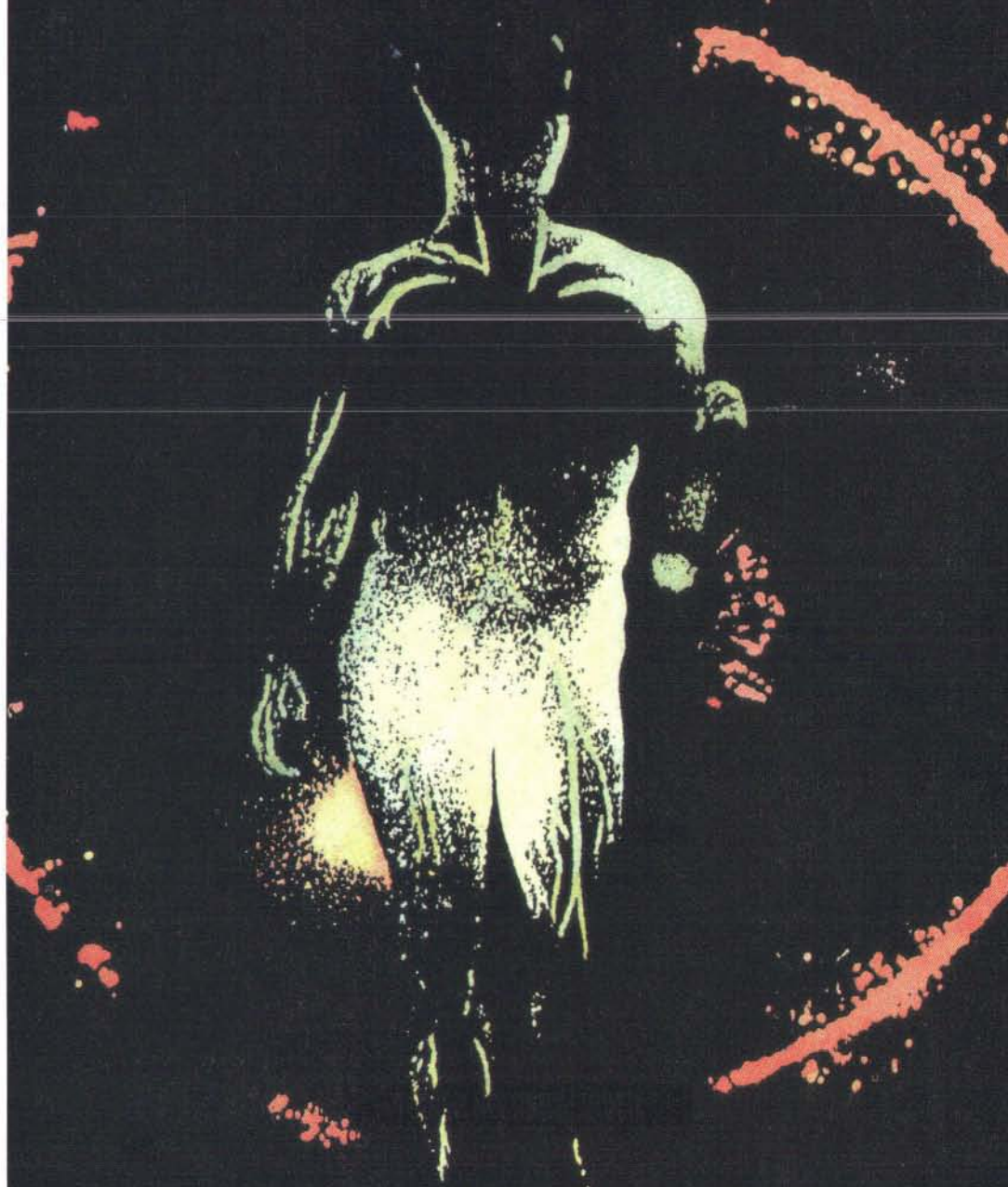
Music Controls:
3-Fast Forward
4-Louder
5-Softer
*-Exit music/bypass
most prompts

A charge of 95 cents per minute will appear on your phone bill. An average call is about 2.5 minutes. Music Access samples for reviews in this issue are active May 7, 1994 – Aug. 1 1994.

At the beginning of each music review, you'll find a four-digit code for each album. To hear sample cuts, dial the 900 number below, entering this code when prompted. You'll hear up to three minutes of music, at 95 cents per minute. "Fast forward" by punching 3, louder volume 4, softer 5. To use Music Access, you have to be 18 and have a touch-tone phone.

Code	Artist and Title
1266	Sonny Chillingworth, <i>Sonny Solo</i>
1267	16-17, <i>Gyatso</i>
1268	Bob Berg, <i>Enter the Spirit</i>
1269	Renegade Soundwave, <i>How you doin'?</i>
1270	Silica Gel 50) <i>Noisy Children Party</i>
1271	Brian Eno, <i>Instrumental</i>
1272	Sausage, <i>Riddles Are Abound Tonight</i>
1273	Seefee, <i>Quique</i>
1274	Maria Luisa Cantos, Piano <i>Joaquin Nin-Culmell: Tonadas</i>

In the beginning there was Sadness...



the CROSS
of changes

ENIGMA

2

the sensual follow-up to the best-selling
Enigma album MCMXC, A.D. featuring "Return to Innocence"

Gregorian chants.
A siren's voice.
That beat.

Available everywhere, or call toll-free:
1-800-648-4844 (9AM-9PM E.S.T.)

TOWER RECORDS/VIDEO



Produced and engineered by "Curly" Michael Cretu

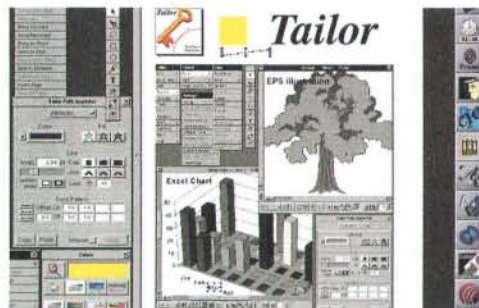
©1993 Virgin Schallplatten GmbH. Issued under exclusive license in the US by Charisma Records America, Inc.



PostScript Surgery

In these days of multiplatform democracy, when you can buy QuarkXPress for both Mac and Windows and Adobe Photoshop for the SGI Indy, there is still the occasional single-platform application that is so useful it justifies buying a new computer. Graphic artists and service bureaus might find this to be the case with Tailor, a PostScript editing system developed in Belgium by First Class NV.

Tailor is a one-of-a-kind program that takes a PostScript file from any application (even extremely twisted files created by keyboarding in data), finds all the lines, curves, shapes, fonts, and blocks of text, and then lets you edit it directly on the computer screen. For example, you can use Tailor to edit your company's Encapsulated PostScript logo, even if you've forgotten or lost the application program and the data file that you used to generate that logo. Or, use Tailor to pull figures or illustrations out of other



Decrypting PostScript for the average geek.

PostScript documents, change them to suit your needs, and put them into your own. It does this by actually interpreting the PostScript file, just as your printer would. When you're done, just click "Save" and you've got a brand new PostScript file, with any modification that you wanted to make.

Tailor also works great in a prepress house, since it can read PostScript files generated from Macs, PCs, UNIX boxes, or any other platform, fixing numerous bugs that seem to creep into production. Tailor is so useful that, for some people, it's worth plunking down the US\$795 you need to purchase NEXTSTEP so you can run Tailor on your 486 PC.

— *Simson L. Garfinkel*

Tailor (for NEXTSTEP): US\$495 (50 percent educational discount). Alembic Systems International Ltd.: (800) 452 7608, +1 (303) 799 6223, fax +1 (303) 799 1435, e-mail info@alembic.com.

Smart Bricks

The latest incarnation of Lego, the Lego Dacta Control Lab, puts the power of a Mac or Windows computer behind those dumb little bricks. The interface (US\$222) does digital-to-analog and analog-to-digital conversion and connects via the serial port. There are worm gears, spur gears, crown gears, racks, pneumatic cylinders, differentials, pulleys, motors, touch sensors, light sensors, motion sensors, temperature sensors, and a small battery-operated Manual Control Center (\$85 by itself) that can store two programs. The spiffy software that comes with the kit ran the first time I tried it. You can write programs as complex as you wish, so long as you can phrase your wishes in Logo (the kids' programming language).

The things you can make are incredible. The enclosed literature suggests a six-legged walking robot. Want a miniature plant-growing room that controls temperature by opening and closing a window? Sure. How about a door that swings open when it detects a toy car approaching? Easy. While designing an exhibit for San Francisco's Exploratorium museum, I used my Lego kit to build a fully working



The fast track to a CS degree has a pit stop in Legoland.

mock-up to demonstrate the concepts.

If you're a parent and your kids are computer literate, they're probably ready. Make 'em read the manuals themselves, insist they touch type if they're to be allowed to use this toy, and get them a book of Rube Goldberg cartoons. This will both boost their IQs and have them ready for college 1.5 years sooner than is otherwise thought possible. And they'll enjoy every minute they can get the kit away from you. Is this the best toy in the known universe or what?

Lego is everything except cheap. The software system is \$80, and you will also need an interface cable (\$25). A great way to begin is with their grand Control Lab Starter Pack (\$599), which includes enough Lego parts so that your first evening will be spent just sorting. The less expensive Control System Starter Pack (\$450) is more modest but can get you started, then Lego will nickel-and-dime you to death for the small parts you covet. — *Jef Raskin*

Control Lab (Starter Pack): US\$599. Lego Dacta: (800) 527 8339, +1 (203) 749 2291.

Moving to the Rhythm of the Punch Press

Industrial Revolution, a long overdue site inspection of industrial music, sweeps broadly across the entire history and diverse offerings of this genre. The early art noise assemblages of Throbbing Gristle and Einstürzende Neubauten, the hardened electro-funk dance of Nine Inch Nails and Die Warzau, the torturous metal of Ministry and its spawns, and the cyber-horror of groups like Skinny Puppy are covered in short histories, discographies, and photographs. Band lineup changes and the migrations of group members are cross-referenced. A brief chronology of industrial music is included, beginning with the introduc-



Not just for gearheads.

tion of electronic instruments in 1928 to the release of Psychic TV singles and 12-inch mixes in 1994. Author Dave Thompson also bravely attempts to chart the influences on industrial by such artists as Stockhausen, Kraftwerk, Can, and Brian Eno.

The only disappointment here is that industrial fanzines, artists, writers, and clubs are not listed. In an incestuous subculture like this, these aspects are as vital as the music that fuels the scene. A double CD companion, containing over two hours of music, is also available.

— *Gareth Branwyn*

Industrial Revolution, by Dave Thompson, US\$18.98. CD Companion, US\$19.98. Cleopatra Music: +1 (310) 305 0172, fax +1 (310) 821 4702.

The Teddy

T.V. Teddy looks just like an old-fashioned plush teddy bear. But nestled inside the cute little guy's stuffing are enough radio electronics and robotics to make the Terminator feel positively inadequate by comparison.

With all this fancy gear to animate Teddy, you'd expect kids to have a great time making it say things and controlling the mechanism that manipulates its eyes and mouth. But all control of the bear is directed by specially prepared VHS tapes (one is included with the package; others are sold separately) that have an encoded control track, which is invisible to the viewer. This track is picked up by the T.V. Teddy Transmitter, a device that hooks



A question of control.

up to the VCR, and the signal is sent to Teddy. When a character on the TV talks or asks T.V. Teddy a question, the bear responds in a squeaky voice of indeterminate gender. Observing T.V. Teddy having a dialogue with a character on the TV screen is as real as watching C3PO talk to R2D2. The child is assigned the role of passive observer, not included in the conversation.

Will kids want to watch TV with an interactive friend that ignores them? ABC-TV seems to think so. Later this year the network is planning to broadcast several T.V. Teddy specials that will include the data to control the speech and behavior of robot bears in living rooms all over the country. —Albert S. Cho

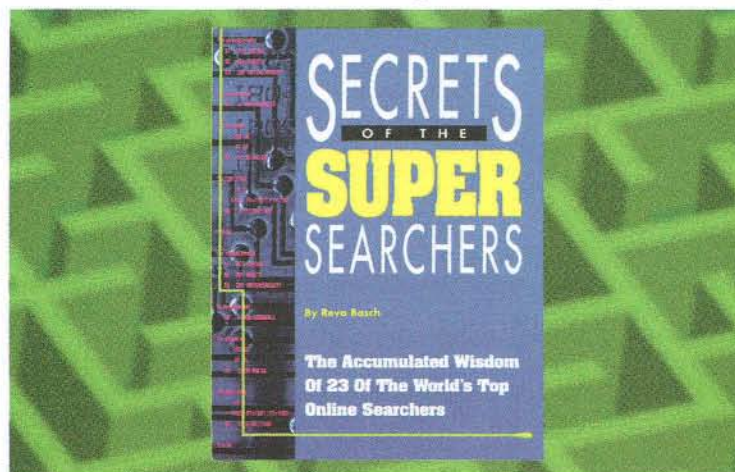
T.V. Teddy: US\$69.99. Individual tapes: \$12. Yes! Entertainment: +1 (510) 847 9444.

Secrets of the Super Searchers

Face it, not all information is free, even if it wants to be. True, your average net-surfing *BIFF@big.state.edu* can uncover gems on the Internet with tools likearchie, veronica, and WAIS. But the good stuff is locked behind serious ice and forbidding fares on systems that strike fear into amateur info-brokers and seasoned librarians alike.

Secrets of the Super Searchers author Reva Basch and the 25 grizzled wizards interviewed in her book have been using systems like Dialog and Lexis/Nexis and the thousands of databases they carry — Medline, ABI/Inform, Investext, and Trade & Industry ASAP — since the days of 300-bit-per-second modems and thermal print teletypes. While *Secrets* doesn't address the nuts and bolts of using these systems, it is a tremendous resource for anyone interested in the online research and consulting industry. From strategies for effective searching (selecting appropriate databases, restricting or fanning out a search, choosing between full-text and abstract searches, and knowing when to stop) to the dynamics of consulting with and billing clients, it's all here.

Basch's interviews yield fascinating insights into the minds and methods of these information sleuths. "Super Search Secrets" at the end of each chapter highlight the essentials raised in each interview. Since the searchers themselves are sampled from diverse professions —



Want to find it online? Start with this analog book first.

from jack-of-all-trades generalists and public and university librarians to specialized professionals in the chemical, corporate, government, legal, medical, patent, pharmaceutical, social science, and technology trades — there's little left uncovered.

Take the profile of Linda Cooper, client-centered entrepreneur. This no-nonsense woman bares all: deft approaches to sifting clients into categories, subtle (and not-so-subtle) ways of extracting critical information about expectations and budgets during reference interviews, and going online with a battery of alarm clocks, timers, and strategies for multitasking, parking where it's cheap, and otherwise making the most of her (and her clients') time.

There's one charming chapter with Lee Sapienza, a pioneer in getting high school students to shine using online search and collaboration tools, another on the trails blazed by N. J. Thompson during her intellectual property searches in trademark and common-law databases. Jargon watchers: Heed the ant vs. grasshopper thread running through the book.

One of Basch's key themes is that online is not the One True Path to glistening nuggets of information. The 235 paper pages of *Secrets of the Super Searchers* nicely illustrates that point. —Eric Theise

Secrets of the Super Searchers, by Reva Basch, US\$39.95. Online Inc: (800) 248 8466, fax +1 (203) 761 1444.



DIGITAL MANTRAS The Languages of Abstract and Virtual Worlds

Steven Holtzman

Holtzman synthesizes ideas from music, art, computing, history, mathematics to arrive at a new philosophy of creativity for the digital age.

"*Digital Mantras* is must-read material for any aspiring 'renaissance person' in the digital age. Holtzman manages to draw together topics ranging from the history of Hindi linguistics, to 20th century visual aesthetics, to computer music, into a coherent synthesis of "what it's all about." I consider this book invaluable for anyone — both technologists and artists — concerned with the ramifications of 20th century philosophical, aesthetic, social and artistic developments."

—Stephen Travis Pope, Editor, *Computer Music Journal*

"This book is very timely. The digital revolution needs a critical look at aesthetics in order to progress into the mainstream of art and music. This book is the first effort to provide a critical overview of the digital world of art, music, and sculpture. It should help lay a foundation to move forward."

—J. Michael James, Virtual Sculptor

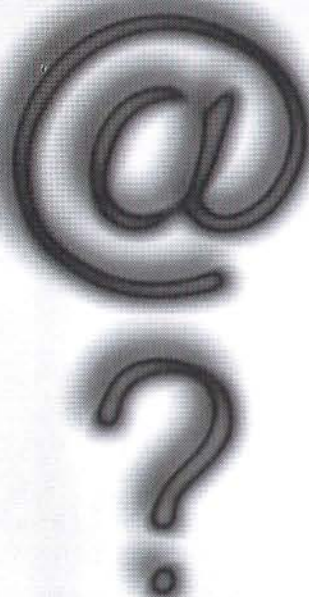
460 pp., 79 illus., 16 color \$29.95



The MIT Press
55 Hayward Street
Cambridge, MA 02142

At fine bookstores
or toll-free:
1-800-356-0343
(US & Canada).

Because no one
can remember
16,000,000
Internet addresses



You need
The Leading Address Book Manager Since 1988
Dynodex

It's not who you know,
it's who you can reach!

Organize
Search
Sort
Print
Dial

\$69.95 Macintosh, and \$59.95 Windows.

800-434-0066

Portfolio Software, Inc., Richmond, Vermont 05477
APPLELINK: Portfolio *** AOL: Portsales
Internet: Portfolio@AOL.com *** CIS: 75300,520

Online Everywhere!

1. Video games

It is no coincidence that Hollywood executives have begun to express interest in the video game industry just as the market's rapid growth and huge profits are coming to an end. The industry has matured and is now plagued with many of the same problems and development costs faced by movies: ratings for sex and violence, long development cycles, and overpaid actors. Sega and Nintendo, which both posted decreased profits last quarter, may be out of their league. Will we soon see the rare event of the US taking over a Japanese-dominated industry?

2. Processor wars

The industry is watching the Intel Pentium vs. Motorola PowerPC war with a certain glee, most rooting for Motorola largely out of dislike for Intel's long-running dominance in the microprocessor market. The two companies have been engaged in a running war of benchmarks, each adding new tweaks every couple of months to boost their SPEC ratings a few notches. But these numbers are almost completely irrelevant; the success of Intel's original 8086 showed that who your allies are is more important than technological factors. And with both IBM and Apple now backing the PowerPC, Motorola is looking like the winner.

	Current Position	Position Last Month	Months on List
Video games	1	2	2
Processor wars	2	—	1
Intellectual property	3	3	2
Intelligent highways	4	—	1
Data buses	5	—	1



3. Intellectual property

Intellectual property law is the last refuge of a dying company: Unable to create new products, the company tries to hold on to what little it has. This used to be rare in high-tech, where innovation is rapid-fire and companies are founded by engineers who know that the real intellectual property walks out the door every night. But a number of industry players have become fat and lazy, unwilling to stay on the technological treadmill. In Silicon Valley, the signs of death are bureaucratic buildup and patent suits.

4. Intelligent highways

While sometimes linked with telecommuting, intelligent highway systems are being hyped for very different reasons. It is not, even in LA, the rank and file who are clamoring for intelligent highways; it is research labs and aerospace dinosaurs looking for new ways to stay on the government dole. You could almost smell the pork last year when the Department of Transportation awarded contracts to Hughes Aircraft, Rockwell, and Westinghouse for work on the Intelligent Vehicle Highway System. What makes this particularly discouraging is that these Cold War companies are designing a system that will be able to track where we drive our cars, potentially infringing on our privacy.

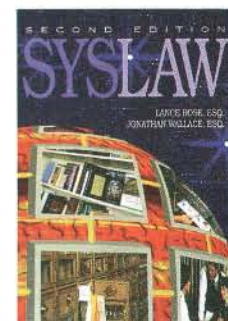
5. Data buses

For too long, the speed of I/O has been ignored in the quest for higher computer performance. The large bandwidth required for video and multimedia applications is now stressing many previously neglected aspects of computer systems. Most notably, the bus — used to transport data within the computer — has become a significant bottleneck. The result is the current scramble for new bus technologies as companies discover that the standards agreed on (such as VME and Futurebus+) are actually too slow. The next few years will be dominated by proprietary buses — meaning more confusion for the consumer and more work for the standards committees.

— Steve G. Steinberg

Law and Order on the Electronic Frontier

If you run a bulletin board system (BBS) or a networked computer, then *SysLaw* should be your desktop reference book for legal questions. In one concise volume, the authors tackle difficult questions that confront every sysop. Within this book's 306 pages you'll find highfalutin issues like freedom of speech and privacy, as well as nuts-and-bolts questions concerning copyright law, the Electronic Communications Privacy Act, and legal issues that might arise if you decide to shut down your BBS. In between are all of the traditional hot buttons, including kiddie porn,



wiretapping, and electronic search-and-seizures.

The only problem with *SysLaw*, if you can call it a problem, is that many of the legal opinions rendered by authors are necessarily conjecture. Despite the self-appointed legal scholars that hold court on Usenet, there have been precious few actual court cases upon which to base precedent and create a grounded legal theory. But *SysLaw* is the best resource available today for anyone who surfs the Net and wants to avoid being involved in the groundbreaking legal cases that are sure to surface.
— Simson L. Garfinkel

SysLaw, Second Edition, by Lance Rose, Esq. and Jonathan Wallace, Esq., US\$34.95. PC Information Group Inc.: (800) 321 8285, +1 (507) 452 2824,

Doing the Wave

The PR propaganda that came with the Wave Radio claims that Dr. Amar Bose (the man behind the biggest speaker company in the world) has harbored a lifelong dream of building a tabletop radio that really sounds like a hi fi. Well, Amar, you can put a tick next to that dream and move on with the rest of your life.

As Penn Gillette (Teller's vocal buddy) will tell you, a lot of magic is just plain lying. In this case, Amar's lie is "What you see is what you get." While the Wave Radio is only about the size of a college dictionary, inside there's actually a corridor almost a full yard long and as convoluted as your intestines. Sound travels from one of two 2.5-inch speakers through that wave guide and produces bass all the way down to 70 Hz, which, while it may not match what emanates from rapmobiles, is still utterly convincing. Meanwhile, both speakers handle stereo chores above 250 Hz, producing clean, sweet sound that will have your friends wondering where you've hidden your fancy speakers.

Not only does Wave Radio sound good, but it's



You won't believe it till you hear it.

loaded with useful bells and whistles. For example, it has finger-friendly, soft, rubbery control buttons. It has a neat credit-card-sized remote control, so you can adjust it from across the room. You can fall asleep to one station and wake up to another. And it has two separate alarms: You and your bedmate can set different wake-up calls - guaranteed wake-ups, since the volume gradually rises to intolerable.

The bells and whistles are fine, but it's the sound that makes you smile at this baby. Turn the volume control all the way up, so loud you've got to shout to hear yourself - and it doesn't distort. At all.

My bedmate and I have been listening to the Wave Radio now for more than six months, and this little box is so good we still haven't invested in a proper hi fi. What we did was buy a portable CD player and plug it into the Wave Radio (it could have been a tape recorder too).

At US\$349, this isn't the cheapest clock radio in the world. On the other hand, what's the realization of a dream worth? - *Levi Rizetnikof*

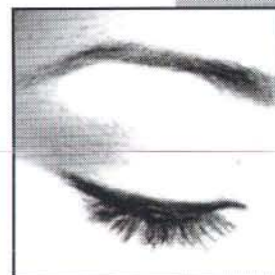
Wave Radio: US\$349. Bose Corp.: (800) 358 2673, +1 (508) 879 7330.

Burt Arnowitz Russell Brown(Adobe Systems) Michael Patrick Cronan Drew Huffman Brenda Laurel(Interval Research Company) Clement Mok Brad deGraf(Colossal Pictures) Andreas Combuchen(Frankfurt Gips Balkind) Harry Marks Denise Caruso(Friday Holdings) Jessica Helfand Clint Goldman(Industrial Light & Magic) Graham Nash(Nash Editions) Howard Gutstadt(The Sony Institute) Bart Nagel(Mondo 2000) Pedro Meyer Steve Nelson(Brilliant Media) Rick Smolan Steve Gano(Kaleida Labs) Michael Rogers(Newsweek Interactive) Jane White(Paramount Technology Group) Kristee Rosendahl Brent Peterson(ABC

Photography) Paul Saffo(Institute For The Future) Stuart McBride(United Digital Artists) Barbara Roberts(F&G International) Jerry Weimer(Wor

Picture Exchange) Loretta Staples(U dot I) Ray DeMoulin(ASMP) Victoria Wayne(Korn/Ferry International) Bill Rollinson(T/Maker) Joe Sparks(Pop Rocket) Todd Rundgren Georgia McCabe(Applied Graphics Technologies) Linda Stone(Microsoft) Jim Ludtke Hal Josephson(The 3DO Company) Louis Rossetto(WIRED) Jim McKee(earwax) Pamela Tompkins(The SoftAd Group) Juli Banfe(Silicon Graphics) Douglas Kirkland Mark Schlichting(Living Books-Broderbund/Random House) David Bunnell(NewMedia) Doug Millison(Morph's Outpost) David Smith(Virtus Corporation) John Kao(Harvard Business School) Louise Velazquez(Quincy Jones Productions) Jan Abrams(I.D. Magazine) Kai Krause(HSC Software) Robert M. Greenberg(RG/A Digital Studios) and special thanks to Apple Computer...

(It's about time.)



Multimedia

The multimedia conference at
VISCOMM West '94

Organized by United Digital Artists

Moscone Convention Center
San Francisco June 2-4 1994

For more information:

CALL: 800/243-3238 or 203/852-0500

FAX: 203/857-4075 or 203/831-8446

VISCOMM WEST 94
The Visual Communications Expo

Produced by CMC

VISCOMM West '94 is for the trade only.
No one under 18 admitted, including infants.



My Favorite Free Call

When I have a question for my government, I call the information specialists at the Federal Information Center (FIC). They've saved me countless hours of dealing with other government officials who are determined to forward me into voice mail hell just to get rid of me.

Alas, even the FIC uses a voice mail system, but you can dodge it by pressing 5 as soon as you make the connection. You'll get a real human on the phone, one who will help you find answers to your questions. Recently, I was doing research for my story on the downsizing



Call the Feds free.

of the ROTC. Instead of calling a local ROTC recruiter for a quote, as my editor suggested, I called the FIC, and ten minutes later I was speaking with the colonel in charge of the program at the Pentagon. I can't imagine the number of calls I would have had to make to find this person without the FIC's help.

Of course, once the FIC points you in the right direction, you could end up dealing with an agency that gives you the usual run-around. But at least you'll know you're getting sandbagged by the proper department. — *Seth Kaplan*

Federal Information Center, (9 a.m. to 8 p.m. EDT): (800) 347 1997, PO Box 600, Cumberland, MD 21502.

Eye Spy

Thinking of taking a little "loan" from the office petty cash box? Perhaps you are feeling a bit light-fingered in the hardware store today. Or maybe you're just interested in catching a quick butt in the supply room marked "No Smoking." Think again. And you might want to examine that "No Smoking" sign more closely. If your employer is a customer of Visual Methods Inc., that sign may contain a miniature closed-circuit TV camera recording your every move. No wires? That's because it also contains a video transmitter broadcasting your sorry-assed guilt straight to a VCR at the security desk.

The Westwood, New Jersey-based company's catalogue offers a simulated fire sprinkler with a pan/tilt/zoom camera hidden inside (US\$4,000), a nonworking smoke detector with a wireless transmitter-receiver (\$1,999), as well as functional clocks and trash cans containing tiny video cameras. There is even a video monitor that contains a camera pointed at the viewer. ("Who's watching the guards?") Americans do love their cars, so mobile surveillance is important too. That Kleenex box on the rear window deck? How about the innocent looking



Is that a video camera in your pocket or are you just glad to surveil me?

CB antenna? All can be outfitted with microvideo.

Thanks to pinhole lenses and high-sensitivity micro-charge-coupled device arrays, the hidden cams are all but undetectable. Given a little ingenuity, these tiny spy-eyes can be incorporated into just about anything. Low light or total darkness is no problem with an infrared device.

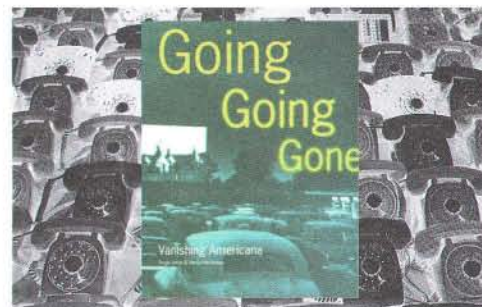
For the field operative on your gift list, there is a nifty line of surveillance body gear. At the annual Surveillance Expo in McLean, Virginia, where spooks, private eyes, and technical wizards gather to network, company president Ted Sandin demonstrated his denim-jacket-cum-snooperscope. Embedded in one of the shiny metal buttons was a camera wired to an under-the-shoulder microvideo recorder. Denim clashes with your trench coat? Then get the pocket spiral notebook with pinhole lens or the tie clasp video camera. Want to catch up on the latest in video surveillance techniques? Visual Methods Inc. offers hands-on seminars in areas including lens selection, pinhole fiber optics, and covert surveillance cameras. — *David Foss*

For the Visual Methods Inc. catalogue: +1 (201) 666 3950, fax +1 (201) 666 7931.

Gone, Man, Gone

From Chronicle Books, known for its wonderful documentations of American things and ways, comes *Going Going Gone: Vanishing Americana*, a book of epitaphs for such cultural icons as the automat, bridge parties, the nuclear family, garters, girdles, and two-newspaper towns. The authors remind us how, quietly and without notice, so many things left the American scene — like chop suey, hotel keys, rotary phones, fire escapes, and balsa-wood model airplanes. And they locate each in its proper cultural place through a rich sampling of image and anecdote.

Take the section on the enclosed telephone booth, that softly glowing, lonely beacon on the prairie. These roadside booths were scientifically designed for easy use and proper posture — some versions offered a metal shelf tilted at an angle to deter urination. Authors Susan Jonas and Marilyn Nissenson pull together a wonderful set of references — the late '50s student fad for phone booth stuffing and the difficulties Christopher Reeve (as Superman) faced when



But who really misses the rotary phone?

seeking a booth for changing.

Reading this book made me begin to involuntarily compile a surprising — and encouraging — mental list of the things that we thought were gone that have come back. The convertible, for instance, was prematurely pronounced dead in the late '70s. Some things come back in oddly transmuted form. Vinyl records have turned into collectibles; music buffs store them in sealed vaults and play them only rarely and on special US\$4,000 turntables. The Motion Picture Production Code, which gave us the X rating, may be gone, but now we have a rating system for video games. And not long ago, New York Telephone authorities announced they were bringing back rotary phones in some neighborhoods — to deter high-tech drug dealers armed with beepers. What goes around comes around — sometimes. — *Phil Patton*

Going Going Gone: Vanishing Americana, by Susan Jonas and Marilyn Nissenson, US\$18.95. Chronicle Books: (800) 722 6657, +1 (415) 777 7240.

Street Cred Contributors

Gareth Branwyn (garethb2@aol.com) is senior editor of *BOING* magazine and the creator of the HyperCard program Beyond Cyberpunk.

Colin Berry writes about music and other things for *Ray Gun*, *Puncture*, *BOING BOING* and *SF Weekly*. He's probably waited on you in some San Francisco restaurant.

Albert S. Cho (choal@leland.stanford.edu) is a graduate student of product design at Stanford University.

Lisa Ferrara is a writer and rave culture insider from San Francisco.

Simson L. Garfinkel (simsong@mit.edu) is a computer consultant and science writer.

Jim Gasperini, (jjmg@well.sf.ca.us) author of *Hidden Agenda*, is currently designing multimedia titles for several platforms, in Paris and New York.

Bryan Higgins plays the French horn and clavichord, writes fiction and software, and lives in Berkeley and Soda Springs, California.

Richard Kadrey (kadrey@well.sf.ca.us) is senior editor at *Future Sex* magazine as well as author of the novels *Metropolis* and the forthcoming *Kamikaze L'Amour*. In 1983, he moved to San Francisco and has been there in the fog ever since.

Seth Kaplan (sethross@aol.com) is a freelance writer and multimedia developer who lives in New York City and likes to repress memories of the two years he spent living in Southern California.

Phil Patton is a frequent contributor who recently wrote "Stealth-Watchers" for *Wired* 2.02.

Jef Raskin (raskin@jef@aol.com) created the Macintosh computer project and plays the contrabass recorder in F.

Stephen Reese (heinzr@tvo.org) spends his free time working as a writer, filmmaker, electronic musician, graphic artist, and computer software designer.

Mamie Rheingold is a 9-year-old freelance writer. She is related to Howard Rheingold.

Levi Risetnikof is a contributor to the legendary *Electric Word*, and is currently surfing for a living in Hanalei on the island of Kauai.

James Rozzi is a freelance writer, woodwind musician, and teacher in the Orlando, Florida, area.

Rich Santalessa is the former editor in chief of *Windows User* magazine. Currently he's the editor of *PDA & Wireless World*.

Steve G. Steinberg (tek@well.sf.ca.us) is a computer science student and the editor of *Intertek*, a technology and society journal.

Dean Suzuki, PhD, is a professor of music history at San Francisco State University.

Scott Taves (staves@aol.com) is the director of Reactor Sound, a new record label in Chicago. He's partial to machine music.

Eric Theise (verve@cyberwerks.com) is co-founder of Bay Area Internet Literacy (BAIL) and is editor of the Internet pages for the forthcoming *Millennium Whole Earth Catalog*.

David Voss (dvoas@aaas.org) fled a cushy job in physics to become a senior editor of the journal *Science*. He has written for *Physics World*, *Photonics Spectra*, and *The New York Times*.

INSTEAD OF JUST WATCHING, CREATE THE MEDIA
WITH LOW-PRICED, HIGH-POWERED MEDIA SOFTWARE FROM OSC



DECK II™ \$399

DIGITAL AUDIO WORKSTATION SOFTWARE FOR MACINTOSH

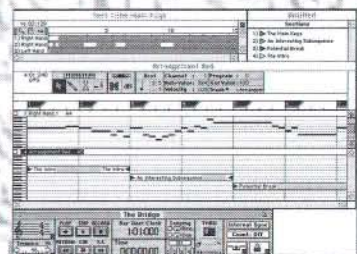
DECK II OFFERS CD-QUALITY MULTITRACK HARD DISK RECORDING WITH TIMELINE-STYLE WAVEFORM EDITING, CONTINUOUS SYNC TO ALL SMPTE FORMATS, UNLIMITED VIRTUAL TRACKS AND DIGITAL MIXING, REAL-TIME MOVING FADER AUTOMATION, SYNCHRONOUS QUICKTIME MOVIE PLAYBACK DIRECT FROM DISK AND TANDEM OPERATION WITH METRO FOR INTEGRATED MIDI + DIGITAL AUDIO. FOUR TRACKS ON DIGIDESIGN SOUND TOOLS II/AUDIOMEDIA™, SIX TRACKS ON SPECTRAL INNOVATIONS NUMEDIA™ CARDS AND 660AV, EIGHT TRACKS ON PRO TOOLS™ & MACINTOSH 840 AV. 660/840AV - NO AUDIO CARD REQUIRED!



METRO™ \$225

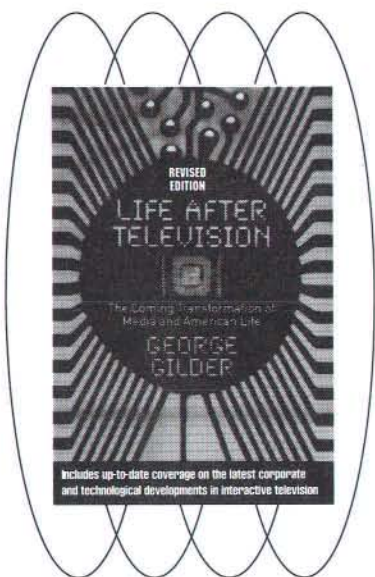
METRO IS OSC'S PROFESSIONAL MIDI SEQUENCER, WITH THE FEATURES YOU EXPECT FROM A HIGH-END SEQUENCING PACKAGE PLUS A SIMPLIFIED INTERFACE AND FULL BACKGROUND & FOREGROUND SYNCHRONIZATION WITH DECK II. METRO INCLUDES SUPPORT FOR GALAXY™, UNISYN™, OMS, MIDI MANAGER AND MIDI TIME PIECE™.

DECK II won the 1990 and 1993 MacUser Eddy Award for Best New Music & Sound Product



CALL OSC AT 1-800-343-DECK TO LEARN MORE.

NOW IN PAPERBACK



Life After Television

The Coming Transformation of Media and American Life
Revised Edition
GEORGE GILDER

"Imagines a world in which the boob tube has given way to the living room telecomputer....Mr. Gilder's case is galvanic, at times even intoxicating."

— Jim Holt, *Wall Street Journal*

In this visionary book George Gilder brilliantly and persuasively outlines the sweeping new developments in computer and fiber optic technology that spell certain death to traditional television and telephony. The paperback edition has been completely revised and expanded to include almost fifty percent material new to this edition. Now, more than ever, an essential tool for a richer, more prosperous future for all citizens of the Computer Age.

Now at bookstores



NORTON 500 Fifth Avenue, New York, NY 10110

The first AFI/Kauai Summer Institute featured the creative team behind *Jurassic Park*, and an instant tradition was born: challenging ideas and hot artists in paradise. This summer join the Kauai Institute for Communications Media and The American Film Institute, with conference chair Harry Marks, the creative director of AFI's Advanced Technology Programs, and the world's leading design

virtuosos in a dialogue about their digital future and yours. This conference cannot be missed, if you care about the future of: motion picture production design; print and graphic design; architecture/space design; industrial and packaging design; broadcast graphics and title design; urban/environmental planning; computer interface design; and education and publishing.

The AFI/Kauai Summer Institute '94 presents

Imaging the Future:

The Effect of the Digital Revolution on Design

July 21-24, 1994,
The Princeville Hotel
Kauai, Hawaii

Call now for your registration kit, including conference schedule, speakers, hotel, airline and registration information. 1-800-999-4234 or 213-865-7690.

Explore the design professional's role

in a world in transition.

What Are
Harry Marks
Michael Backos
Alan Chan
April Greiman
Rob Hennigar
Flavio Kampah
Douglas Kirkland
Brett Leonard
Syd Mead
Dennis Muren
Doug Patton
John Plunkett
Michael Rotondi
Paul Saffo
Robert Stein
Payson Stevens
and You
Doing on a Beach
on Kauai in July?



A joint venture of
the Kauai Institute
for Communications
Media and
The American
Film Institute.
Co-sponsor:
County of Kauai
Host Sponsor:
Hawaii DBD & T
and Kauai Economic
Development Board
Media Sponsor:
Wired Magazine

Curling Up to a Uniform Addressing System

Nothing omitted, nothing extraneous – readable by machine or human. That's the goal of *Uniform Resource Locators* (URLs), a specification – or Internet “road map” – being developed by the Internet Engineering Task Force. URLs have been an integral part of the World Wide Web since 1990 and are quickly evolving into the shorthand of the Internet.

The generic URL includes the access method, optional username/password, domain name of the computer holding the resource, optional port number, and the path to the resource. Here are some examples: *telnet://rs.internic.net*; *telnet://madlab.sprl.umich.edu:3000*; and *telnet://search:common@atcc.nih.gov*. The first is a standard telnet to InterNIC Registration Services. The second points to the Weather Underground on its nonstandard port. The third is the American Type Culture Collection, requiring the login “search” and the password “common.” (While you'd never put a private password into a URL, embedding public ones is acceptable.) This collection's URL is listed in Scott Yanoff's *Special Internet Connections*, which itself is available as *ftp://csd4.csd.uwm.edu/pub/inet.services.txt*.

Time out. Since URLs bind the Web together, all browsers let you key them in directly. In Mosaic, you'd choose “Open URL”; in Lynx, “Go.” If you're browserless, however, you must decode the URL, recognizing that, for example, the American Type Culture Collection URL translates to “anonymous ftp to csd4.csd.uwm.edu, cd to /pub, and get the inet.services.txt file.” (Machines clearly have the advantage over humans, here.)

Gopher may be the easiest Internet tool to use, but it's the hardest to create URLs for.

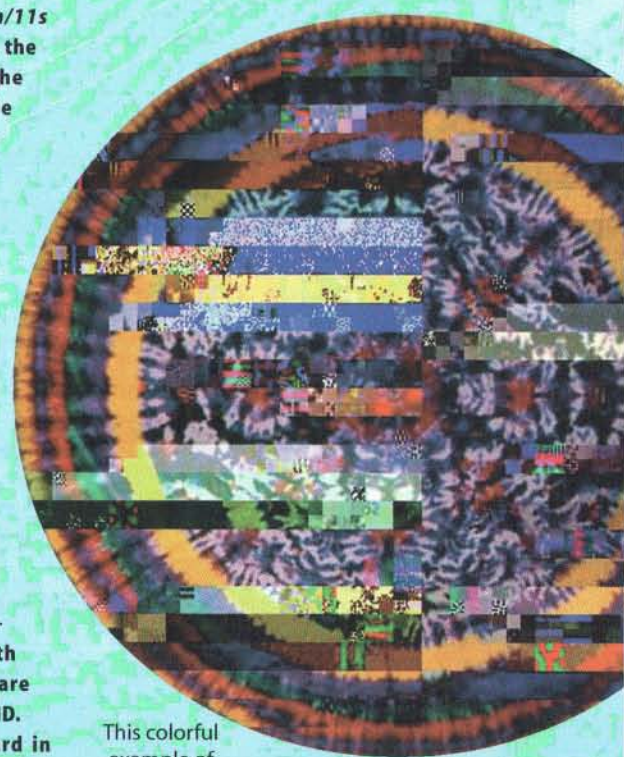
In this URL, *gopher://gopher.well.com/11s/Art/New.Music/Hearts.of.Space/Playlists*, the “11s” has two parts: The first “1” marks the resource's gopher type as a directory, while the “1s” begins the selector string – the definitive path into the gopher.

Mosaic users are most familiar with http (hypertext transport protocol) URLs, as they are the mainstay of the World Wide Web. The Fine Art Forum's home page, for example, is *http://www.msstate.edu/Fineart_Online/home.html*, where .html refers to “hypertext markup language.”

E-mail and Usenet also have URLs. The “//” is not included, as these services are accessed locally. As an example, the URL for my e-mail address is: *mailto:verve@cyberwerks.com*, while a news group's would be *news:rec.arts.marching.drumcorps*. It is possible to specify the unique message ID that belongs to every Usenet article, but this is rarely done, as usually articles only exist on servers for a month or less, and important articles like FAQs are reissued periodically with a new message ID.

Admittedly, URLs are a step backward in terms of effortless human comprehension. However, because they are currently relied upon by gopher and http (World Wide Web) clients and servers, and because of the lack of other sensible cataloguing schemes, they're here to stay. Many resource compendia have started using URLs, and net surfers regularly trade them like baseball cards. But, knowing the Net, just as you become accustomed to them, they will most likely be replaced with something better.

– Eric S. Theise (*verve@cyberwerks.com*)



This colorful example of tie-dyed art by Mikhail F. Fowler (and many others) can be found via *anonymous ftp* from *gdead.berkeley.edu* *cd pub/gdead/graphics/tie-dye*.

Serf No More!

Tired of being a Microserf? Ready to tell 'em to take their McJob and shove it? Troll for a new gig online! Three wired-in resources may just help you ride the wave to a new position.

The *Online Career Center* is a site sponsored by 40 employers and is free for all applicants. Simply point your *gopher* at *gopher.msen.com* and upload your ASCII résumé, update it whenever you have occasion to, or send e-mail to potential employers. Also available are company profiles, career assistance, listings of job fairs, résumé writing workshops, and other profitable resources. Send e-mail to *occinfo@mail.msen.com* for more info.

Similarly, just a telnet away is HEART. This two-way service, which is also free to all applicants, offers listings in the continental US that encompass a number of employers. Its menu-driven résumé creation process is a bit confining (use the summary field if you need unlimited space), but once your résumé is created, you can send your file to any potential employer with just the touch of a key. Telnet *career.com* to have a better look. Or call their voice line at +1 (415) 941 6101 for more information.

Finally, Davis and Associates, a search firm in Massachusetts, maintains a BBS and job board that lists hundreds of high-tech jobs all over the world. *The New Professional Network* can be connected to by modem at +1 (413) 549 8136. Good luck, and good, uh, serfing?

Does It Make Census?

The *Census Bureau* recently unveiled a new *gopher* that is overflowing with news releases, tip sheets, and statistics. Here you'll find a rich vein of information on the bureau's organization, policies, and programs, as well as data on government finances, research papers, statistical software, new product announcements from Data User Services, statistical briefs, and directions to other Internet sites with census data. Especially worth reviewing is SIPP-On-Call. This computer service allows the general public to access large data files from the Survey of Income and Program Participation (SIPP). Surf a *gopher* wave, or, if you have *Lynx* (a character-based World Wide Web browser), launch it with *gopher://gopher.census.gov*. The second and third menu items, *Fact Finder for the Nation* and *Privacy Act and Title 13*, are hypertext documents written in HyperText Markup Language (HTML) that won't show up running *gopher* alone.

High Signal, Low Noise

Political information hounds rejoice! If *The New York Times* isn't providing you with enough information on the geopolitical landscape of Central and Eastern Europe, then you should catch a wave over to the detailed transcripts of *Radio Free Europe's* daily bulletins. As access to most online news services (such as Reuters and UPI) is off-limits to most surfers, it is a pleasure to find one quality service that has opened its virtual doors to all interested news junkies. Transcripts can be found via *gopher* under the "news" menu of many *gopher* servers, such as the University of Michigan's *Gopher Blue* server located at *gopher.itd.umich.edu*. To get the day's transcripts delivered to your beach-bungalow door, e-mail *listserv@ubvm.cc.buffalo.edu*, writing *subscribe RFERL-L your-first-name your-last-name* in the body of the message. Read and enjoy the freedom of the Net.press!

Mr. Watson, Come Here. I Need You!

Those Net.purists who find themselves fearful of the coming 500-channel-to-the-home mega-mergers taking place between cable companies and regional telephone service providers have always known that "The Right Thing" for these companies to do would be to hop on the Net and make their plans publicly available. No one actually expected them to do it. They did. *The Bell Atlantic* *gopher* currently has information about the ten-year anniversary of AT&T's breakup, video dial-tone projects, and much more. Point your board to *gopher://ba.com* and get an ear (eye?) full.

Home Shopping Online

Even surfers who dread the looming "mall" consciousness and impending commercialization of the Net should explore Dave Taylor's compendium of commercial services available on the Internet. *The Internet Mall: Shopping on the Information Highway* is, at the very least, an enjoyable side trip. More department store than mall, this site is divided into floors of "specialty products." The first floor is devoted to media; the second, personal items; the third, computer hardware and software; and the fourth, services. Also featured among all the computer goodies you'd expect are book-sellers and music and video outlets – there's even a florist. *Finger taylor@netcom.com*, or surf to *gopher://peg.cwis.uci.edu:7000/00/gopher.welcome/peg/INTERNET_ASSISTANCE/mall*; or peek in via the Well *gopher, gopher://gopher.well.com/11/Business/mall*. Unfortunately, the Internet Mall doesn't offer any blue-light specials ... yet.

"RL" Net.pubs

Gregarious surfers, searching for a homey, grounding hangout on the waves should slip into Usenet's *alt.pub.coffee-house.amethyst* – a site, some say, that proves the net's true dreamers are realists. While there are many "pubs," or public taverns, on the Net to choose from – such as *alt.pub.dragons-inn* and *alt.pub.cloven-shield* (both role-playing establishments), or *alt.pub.havensrest* (watering hole of space adventurers and aliens) – *alt.pub.coffeehouse.amethyst* is truly unique. Here, patrons post as themselves, and discuss ... (gasp) RL (Real Life)! Picture a 1950s beat coffeehouse with a long bar, offering umpteen kinds of beans, freshly ground and brewed in the latest-model espresso machines. Pull up a stool and smell the swirling aromas of exotic teas and cocoa, or sip a cold Italian ice if it's hot out. Amethyst's rules are simple and straightforward: no fictional personas, no fantasy or science-fiction role playing, and no alcohol. Why is Amethyst revolutionary? Because it allows real people from all over the world to socially interact in a realistic (though virtual) setting. What could be more cyberpunk than VR imitating RL?

Grab Your Lab Coat

Establishing a benchmark for the creation of federal government laboratory profiles in gopherspace, Martin Marietta Energy Systems recently initiated the *Oak Ridge National Laboratory* *gopher* server. This federal site lists an impressive array of resources on its opening menu, including three aerial views that users can download (type a capital D to initiate download and select a protocol). Also available are catalogues detailing Oak Ridge National Laboratory technologies, major projects, technical resources, presentations, and recent publications, as well as employment opportunities and procedures. A deeper menu, one level down, allows complete text searching for various technologies, among them, the Human Genome Project, Advanced Neutron Source, and High Performance Computing Center. Put on your lab glasses and point your board to *gopher://gopher.ornl.gov* to have a look.

Remember the dream in which you could fly? Or how about the one in which you were being chased by a monster but your feet wouldn't move? Or that one where you were naked in front of your high school classmates? And what about the time your home was invaded by Patsy Cline impersonators from the planet Cecropius? What does it all mean? An answer may be found while trading dreams: In *alt.dreams* readers try to make sense of it all. Interpretations range from the biochemical ("Lecithin deficit always brings on country music nightmares, IMHO") to the supernatural ("A prescient vision of the impending demon invasion! Burn all Patsy Cline albums NOW!"). Jung wannabes, here's your chance. Lay back, and grab a pad of paper and a pen....

[illegible]

Anita Brenner brenner@well.sf.ca.us
James "Lord Julius" Scholl
kikun@ccwf.cc.utexas.edu
Bill Frischling scoop85058@aol.com
JC Herz mischief@phantom.com
John Makulowich verbworb@access.digex.net
Eric S. Theise verve@cyberwerks.com

TinyTIM – it's not just a game; it's a really, really big game. Forget the LPMUDs, Dikus, FurryMUCKs, and TinyPerns: TIM's the oldest and best-established virtual community on the Net. A stable, three-year-old MUD, TIM is run by a benign dictatorship – a small group of amazing people (including two of the best Klingon speakers on the planet). In fact, TIM's wizards liked it so much, they bought "yay" – the machine TIM lives in – which means you can put your mind at ease about your favorite hangout going to electron heaven just because some college sysadmin is having a bad day. TIM has no enforced theme: Players can freely explore the multitude of encapsulated worlds, or build whatever they want, unfettered by Builder Bits. Newbies start in Limbo and can choose between a helpful orientation or immediate immersion into the Nexus – a chaotic, fast-paced conversation pit with branches onto a hundred other planes of existence. If you get overwhelmed, take an offramp to UrbanTIM and the Mall of creatures, gadgets, and toys. Or visit Empedocles's House of Ill-Repute, or the First Pop-Tart Church, Harshland, They Might Be Giants land, or any other of TIM's 10,000 rooms. Explore the many rabbit holes by *telnetting to yay.tim.org 5440*, and check The Clock on the Wall for the virtual time of your life.

► The IP address for *ISCABBS* (*Wired* 2.02, "Post Haste," page 122) has changed to 128.255.200.69. To make all changes transparent, however, try *telnetting* to *bbs.isca.uiowa.edu*. ► An alternate wave for the *Fedworld BBS* (*Wired* 2.01, "Fed Up with the Feds?," page 138) is the site's Internet address: *telnet* to *fedworld.gov*. ► It's come to our attention that the music archive mentioned in *Wired* 1.4 ("Net Jammin'," page 94) can be reached by *ftp* at *vac.s.uwp.edu*.

HEAT IN THE NIGHT

N-8-1

1-515

945-6227

FREE!

America's only FREE, no membership fee Adult BBS.
1000+ calls daily, 10,000+ users, 60-40 male-female
ratio, 14, 4K nodes, 32 lines! Action 24 hrs a day
guaranteed, the cache where erotic singles and couples
meet! Customer service: **310-289-3185.**

The world's premier internet system is now online, offering you access to computers around the world!

1-515 FREE UNIX SHELL, SLIP, UUCP
945-7000

NITE
EX
CHANGE

DATELINE
RIP GRAPHICS
HOT CHAT!

1-715
758-1000

Must be
18+

DEDUCTIBLE JUNKETS



If You're Headed to Aspen for Design & Human Bodies

You know it's spring in **Aspen** when the ski bums get real jobs and the celebrities jet back to Hollywood. The off-season? Hardly! In summer, this historic mining town buzzes with conferences and cultural festivals. But if you're headed to the International Design Conference in June, better pack a sweater – it snowed 6 inches in Aspen last Fourth of July!

Bicycles and rollerblades are the preferred modes of transportation during Aspen's snowless months. Rent your bikes at **Aspen Velo** and roll along the Rio Grande trail. For a spectacular view of the city and the peaks of the **Elk Mountain Range**, hike up the **Ute Trail** to the top of **Aspen Mountain** (known locally as Ajax).

For an afternoon escape, hop the bus to **Maroon Bells** (US\$4 round trip) – some of the most photographed mountains in Colorado – and you'll feel you've walked into a postcard of wine-stained peaks, a sweeping valley, and pristine lake. Bring picnic eats from the **Charcuterie and Cheese**, whose offerings range from caviar to corned-beef sandwiches.

When your legs are noodled and just the sight of a mountain hurts, relax on the sunny patio of **Explore Book Sellers and Coffeehouse**. Its vegetarian café is open from 10 a.m. until midnight, and it's a must for bookhounds, pie lovers, and night owls.

The grand **Wheeler Opera House** opened in 1889 during the silver boom, just a few years after Aspen's founding. When the market for silver

crashed, so did the fortunes of the Opera House, but it has been elegantly restored. It hosts a foreign and independent films series concurrent with the design conference.

If you are in the mood to goof – or maybe golf – around, head down to the **Aspen Art Museum**, where the current exhibit "Playing Around – A Golf Art Extravaganza" offers eighteen holes of unique miniature golf.

The rustic **Krabloonik** – meaning "bushy eyebrows" in an Eskimo dialect – is truly a log-cabin restaurant in the wild. House specialties include caribou, moose, and Idaho trout. Its profits help support the **Krabloonik Kennel**, home to 250 sled dogs.

The **Pine Creek Cookhouse** is another area restaurant you won't soon forget. It is the definition of "rugged," planted amid miles of alpine wilderness, surrounded by lakes and 13,000-foot peaks.

If you'd prefer a more casual dinner in town, head over to **Su Casa** for some spicy carnitas and margaritas. Across the street is a small no-name watering hole known by the locals as "**Eric's Bar**." Or stop into **The Flying Dog Brew Pub** for an award-winning ale (it has live bluegrass on Sundays).

But whether you're out on the town or 1,000 feet above it, take it slow – the air is thin up there.

– *Jessie Scanlon*

Thanks to *Bryan Gonzales, Susanne Hines, and Aspen art-folk Greg McCombs and Mary Ann Igna; snowboards of thanks to Dave Brumen.*

June 2-4

VISCOMM West '94; San Francisco

Organized by United Digital Artists, this timely event picks the brains of such industry gurus as Brenda Laurel, Clement Mok, Paul Saffo, Hal Josephson, Kai Krause, and *Wired's* own Louis Rossetto. Companies being represented include Kaleida, Brøderbund, and Colossal Pictures, to name a paltry few. Come to any of a number of informative seminars for the multimedia novice or expert. Learn of business successes and disasters or new roles and job opportunities; take an evening tour of Multimedia Gulch. US\$65/two-hour seminar; \$80/three-hour seminar (discounts apply). Contact United Digital Artists: +1 (203) 852 0500 ext. 605, fax +1 (203) 831 8446.

June 2-5

Interactive Healthcare; Washington, DC

Now in its eighth year, this conference and exposition covers the use of videodisc, CD-ROM, CD-i, multimedia, and virtual reality applications for medicine, nursing, allied health, continuing education, patient education, and health promotion. It provides a comprehensive introduction to interactive video and multimedia computing. Attendees can see state-of-the-art demonstrations, play with a variety of interactive programs, and learn the basic skills required to develop their own interactive courses and presentations. US\$445. For more information, contact Scott Stewart: +1 (703) 354 8155, fax +1 (703) 354 2177, e-mail GTVT95B@prodigy.com.

June 12-17

Design and Human Bodies; Aspen, Colorado

The way we perceive our bodies, the demands we make on them, our expectations of them, and what we understand about them continue to change with the times. More changes are on the way. Design and Human Bodies is the first conference to explore the design implications of these changes. In addition to a plenary speaker roster of high caliber, afternoon workshops will investigate strategic problem solving, universal design, photography, illustration, technology-driven design, and more. US\$625, students, \$150. For more information, contact the International Design Conference in Aspen: +1 (303) 925 2257, fax +1 (303) 925 8495.

June 21-25

Ars Electronica; Linz, Austria

This venerable meeting of art and science minds will feature the provocative theme of "Intelligent Ambience." Ars Electronica will delve into issues of computer-aided environments as well as intelligent, interactive, real surroundings – environments based on machine intelligence. In addition to exhibits on architecture, transportation, and communication, the festival again sponsors the prestigious international Prix Ars Electronica (US\$103,750), awarded for the most dazzling computer graphics and interactive art. Price unavailable at press time. Contact Ars Electronica: +43 (732) 7612 271, fax +43 (732) 7611 350.

June 27-July 1

Home-Oriented Informatics, Telematics & Automation; Copenhagen, Denmark

Technological innovations will transform the home – not to mention everyday life – in the emerging information society. They will affect how private households will function in changing social, economic, and political structures. This conference considers various perspectives and options. Can these technologies contribute to the re-establishment of the home as a living and productive center? HOIT-94 hopes to provide bridges for the various disciplinary approaches to these issues. US\$300. Contact Kresten Bjerg at the University of Copenhagen: +45 31541856, fax +45 32963138, e-mail kresten@vax.psl.ku.dk.

July 6-8

ALIFE IV; Cambridge, Massachusetts

Artificial Life is the branch of science that synthesizes phenomena normally associated with natural living systems via computers and other artificial media. ALIFE IV will touch upon issues of theoretical biology, discussing not only "life as we know it," but "life as it could be." Within the MIT campus, ALIFE IV hopes to encourage the exchange of opinions, ideas, and techniques. Registrants may tour the Institute's Artificial Intelligence Lab or the Media Lab. US\$300; students, \$200. Contact Professor Rodney Brooks: +1 (617) 253 0073, fax +1 (617) 253 0039, e-mail alife@ai.mit.edu, on the World Wide Web, refer to "Events at the AI Lab" at <http://www.ai.mit.edu/>.

Enough talk.
Experience it for yourself.



June 6-8, 1994
Los Angeles

The Interactive Media Festival is
sponsored by Motorola, a company
that develops and markets
technologies and products to make
the electronic frontier possible.

For information:
internet: inquire@media.festival.com
telephone: (800) 573-1212

To register for Digital World:
telephone: (800) 488-2883



MOTOROLA

Newsweek

WIRED



The American Film Institute

cunningham communication inc

The Interactive Media Festival is sponsored by Motorola in association with The American Film Institute and Cunningham Communication, Inc. The Festival and Festival Gallery will be held in conjunction with the Fifth Annual Digital World. The show is produced by The Kenwood Group of San Francisco. The Interactive Media Festival is a registered trademark of The Interactive Media Festival. **MOTOROLA** and  are registered trademarks of Motorola. Copyright 1994 Motorola, Inc. All rights reserved.

Pranksters

81 puters were seized, but no charges were immediately filed. Most people, including Barlow, believed erroneously that the raid was part of a nationwide hacker crackdown that had been dubbed Operation Sun Devil and was thought to be taking on mythic proportions.

A few months later, a field agent from the FBI office in Wyoming visited Barlow on the ranch to ask about the NuPrometheus League. Someone had mailed Barlow, as well as a number of other net.personalities, floppy disks containing pilfered and proprietary source code for the ROM chips in Apple's Macintosh computers. The three-hour interview with the agent convinced Barlow that technology was racing so far ahead of the rest of the world's comprehension that law enforcement was starting to show signs of dangerous confusion.

"It is really sleazy and very depressing to realize how this country works," says Dyson. "On the other hand, it's very exciting to realize that these are a bunch of people from our generation. In quotes, they 'get it.'"

Barlow posted his thoughts on the Well, where, one day, several weeks later, Mitchell Kapor — who had just been visited by a NuPrometheus-investigating FBI man himself — read them, got the chill, and thought, "Wow, this just happened to me, too."

Philosophy and Spreadsheets

The entrées are starting to appear while the introductions continue. Around the private dining room they go, the board members and their friends. "Hi. I'm Bill Joy," says the Sun Microsystems founder. And here's Bruce Katz, who made his millions building up Rockport Shoes, then selling it to Reebok and buying the Well. And Doug Carlson, who describes himself as "soon to be ex-CEO" of Brøderbund, the software company. "I'm looking for work that will be more stimulating," he says.

More people introduce themselves. There's newsletter publisher Denise Caruso, the Walter Winchell of Silicon Valley, and Jane Metcalfe, president of *Wired* magazine, who is about to be voted onto the EFF board herself. Here's David Liddle, the head of Interval Research Corp., a Silicon Valley deep-future think tank; and there's new board member Rob Glaser, who spent ten years with Microsoft before quitting to pursue public interest work.

And Mike Godwin, EFF's first employee. If you want to club this Merry Pranksters metaphor to death, then Godwin has got to be the Neil Cassady of the crew. (Cassady was the ever-present, ever-moving, bigger-than-life, bus-driving *muse* of the Merry Pranksters.) Godwin is a staff attorney at EFF. He's also a net.personality, always online, endlessly rapping and riffing, often off the law, quoting US Supreme Court Justice Brennan or Shakespeare, word for word, without a misquote. In person or on the phone he's the same, never stops talking, punctuating it all with his rapid-fire "right, right, right."

Mitch speaks: "Three-and-a-half years ago, we had a simple dinner here in San Francisco. Andy was there," he says nodding at the cherubic Andy Hertzfeld, co-founder of General Magic and one of the architects of the Apple Macintosh. "We have come a long way.... We were in

the process of starting an organization that had the broad mission of settling cyberspace, extending civil liberties into cyberspace. John (Barlow) and I didn't really have a clue where it was going to go. The two of us had a shared intuition that this stuff wasn't going to be fringe, wasn't going to be exotic, was going to have an effect on everybody's life. I don't think we can even envision the scope of the social transformation that's going to happen."

He stops for a moment to let this idea settle in, then continues.

"We have evolved this into a combination of tactics, from down-and-dirty lobbying — which we do, I would say, in an extraordinarily principled way — with a high-minded evangelism. Creating a better future is a question of getting all the details right. John and I are refugees from the 1960s, trying to make it as adults in the 1990s, understanding that transforming consciousness takes some doing."

Kapor has been trying to transform consciousness for years now, starting with his own.

Picture a young Mitch Kapor standing on a railway platform in St. Moritz looking for a train in the middle of the night. It's 1976. The strap on his luggage dangles, broken, and he's shivering, pacing on the wrong side of the tracks for the London-bound train. People are yelling at him

in a language he doesn't understand. It's dark and the temperature is hardly above freezing. He feels like he's making the Great Escape.

The 25-year-old Kapor had come to Switzerland for what had been advertised as an Enlightenment-or-Bust course at a Transcendental Meditation center. Fourteen hours of meditation a day was supposed to lead to — well, levitation. Instead, Kapor, a kid four years out of Yale University and at the end of a four-year-old marriage, has lost it. He's a mess, frankly, and has decamped in the middle of the night over the protests of his nonlevitating instructors.

How did the son of Phoebe and Jesse Kapor of Long Island, heir to their cardboard-box business, Corrugated Paper Products Inc. of Brooklyn, find himself in this condition?

Maybe his is the archetypal story of the '60s and '70s, the story of the American who tries everything to figure out who he is. "I felt there was something really wrong with me and I needed some kind of transformation experience to push myself out of myself."

Kapor had done LSD, of course, and despite bad experiences, had kept dropping acid until he found himself contemplating jumping out a second-story window into a concrete courtyard. There had to be a better way.

But he decided Transcendental Meditation in Switzerland wasn't it either.

Then in the late '70s, he recalls, after getting a master's in psychology and working as an attendant in a mental institution, Kapor was spending a lot of time in computer stores drooling over the first generation of personal computers. Kapor says: "I couldn't program worth a lick. There are people who can crank out code. I am not one of them. In those days, your status came from being a code jockey. I had a different talent: I could conceive of new kinds of programs and design them." It's the difference, he says, between being a construction worker and an architect.

In 1978, he recalls, when Apple cut the price of the Apple II to \$1,500, he scraped together every cent he had and drove over the border to New Hampshire from the Boston area to buy one, thereby avoiding the sales tax. It's his own obsession with computers that made him pay attention years later to the plight of Phiber Optik and the gang.

One day shortly after buying his Apple II, Kapor, unemployed, was hanging around a computer store when a well-dressed man came in and started fawning over one. Kapor listened as the man (an ophthalmologist) asked all these questions trying to rationalize the purchase of

For faster service, call us and charge your order: 800 50 WIRED (800 769 4733). Outside US call 1+ (415) 904 0660.
Or e-mail your credit card number, expiration date, and address to subscriptions@wired.com

Photo collage: Stuart Cudlitz

Three very good reasons to subscribe to *Wired*:

- 1 You save money.**
An individual subscription saves you up to 40 percent off newsstand rates.
- 2 You receive your copy before newsstand readers.**
- 3 Subscribing may be the only way to guarantee you will get *Wired*.**
We simply haven't been able to keep up with the newsstand demand for *Wired*.

Three ways to subscribe:

- 1 Fill out and mail this card
- 2 800 50 WIRED (800 769 4733)
- 3 subscriptions@wired.com

Be ready with credit card number and expiration date.

Please fold closed along this line.

Three very good reasons to subscribe to *Wired*:

- 1 You save money.**
An individual subscription saves you up to 40 percent off newsstand rates.
- 2 You receive your copy before newsstand readers.**
- 3 Subscribing may be the only way to guarantee you will get *Wired*.**
We simply haven't been able to keep up with the newsstand demand for *Wired*.

Three ways to subscribe:

- 1 Fill out and mail this card
- 2 800 50 WIRED (800 769 4733)
- 3 subscriptions@wired.com

Be ready with credit card number and expiration date.

Please fold closed along this line.

☐ **I want to get *Wired*** – reliably and regularly. Begin my subscription immediately, if not sooner, saving me up to 40% off the newsstand price. I would like (check one below):

Individual subscriber	Can/Mex	Other
1 Year (12 issues) ☐ \$39.95 (33% off single copy of \$59.40)	☐ US \$64	☐ \$79
2 Years (24 issues) ☐ \$71 (40% off single copy of \$118.80)	☐ US \$119	☐ \$149
Corporate/Institutional subscription*	Can/Mex	Other
1 Year (12 issues) ☐ \$80	☐ US \$103	☐ \$110
2 Years (24 issues) ☐ \$143	☐ US \$191	☐ \$210

Foreign subscriptions payable by credit card, postal money order in US dollars or check drawn on US bank only.
*We have a separate rate for corporate/institutional subscribers because pass-along readership is higher. We felt it would be unfair for individual readers to, in effect, subsidize corporate/institutional purchasers.

Name _____

Job title _____

Company _____

Street _____

City _____ State _____ Zip _____

Country _____ Phone _____

This is your ☐ home ☐ office ☐ both

E-mail address _____

Very important. This is by far the most efficient way to communicate with you about your subscription and periodic special offers, and to poll your opinion on *Wired* subjects.

Payment method ☐ Check enclosed ☐ Bill me (for corporate/institutional rates only – see note below)

☐ American Express ☐ Mastercard ☐ Visa

Account number _____ Expiration date _____

Signature _____

Please Note: The "Bill Me" box above is **only** for corporations and institutions needing an invoice – which will be for the higher corporate/institutional rates. There is no "Bill Me" option for individuals.

Wired rents its subscriber list only to mailers that we feel are relevant to our readers' interests. To remove your name from the rental list, please check this box ☐.

AEZ

☐ **I want to get *Wired*** – reliably and regularly. Begin my subscription immediately, if not sooner, saving me up to 40% off the newsstand price. I would like (check one below):

Individual subscriber	Can/Mex	Other
1 Year (12 issues) ☐ \$39.95 (33% off single copy of \$59.40)	☐ US \$64	☐ \$79
2 Years (24 issues) ☐ \$71 (40% off single copy of \$118.80)	☐ US \$119	☐ \$149
Corporate/Institutional subscription*	Can/Mex	Other
1 Year (12 issues) ☐ \$80	☐ US \$103	☐ \$110
2 Years (24 issues) ☐ \$143	☐ US \$191	☐ \$210

Foreign subscriptions payable by credit card, postal money order in US dollars or check drawn on US bank only.
*We have a separate rate for corporate/institutional subscribers because pass-along readership is higher. We felt it would be unfair for individual readers to, in effect, subsidize corporate/institutional purchasers.

Name _____

Job title _____

Company _____

Street _____

City _____ State _____ Zip _____

Country _____ Phone _____

This is your ☐ home ☐ office ☐ both

E-mail address _____

Very important. This is by far the most efficient way to communicate with you about your subscription and periodic special offers, and to poll your opinion on *Wired* subjects.

Payment method ☐ Check enclosed ☐ Bill me (for corporate/institutional rates only – see note below)

☐ American Express ☐ Mastercard ☐ Visa

Account number _____ Expiration date _____

Signature _____

Please Note: The "Bill Me" box above is **only** for corporations and institutions needing an invoice – which will be for the higher corporate/institutional rates. There is no "Bill Me" option for individuals.

Wired rents its subscriber list only to mailers that we feel are relevant to our readers' interests. To remove your name from the rental list, please check this box ☐.

AEZ



No postage
necessary if
mailed in the
United States

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 25363 SAN FRANCISCO, CA

Postage will be paid by addressee

W I R E D

PO Box 191826
San Francisco CA 94119-9866



Fold along this line

Please tape closed (No staples)



No postage
necessary if
mailed in the
United States

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 25363 SAN FRANCISCO, CA

Postage will be paid by addressee

W I R E D

PO Box 191826
San Francisco CA 94119-9866



Fold along this line

Please tape closed (No staples)

this wonderful toy. Kapor went up to him and said, "I think I can help you." The job of computer tutor paid \$5 an hour. Soon Kapor was an independent computer consultant.

He went to business school and dropped out. He spent six months at a Silicon Valley startup. Back in Boston, he met the authors of VisiCalc, the first spreadsheet program, and got an idea for a related application that would graph the results of a spreadsheet. He called it VisiPlot. Soon, the royalty checks for his programs started hitting \$100,000 a month. A software publisher bought him and a partner out for \$1.2 million.

Kapor was 29 years old in 1981, when he decided to raise the capital to start Lotus, a company that would publish the software application that is now generally credited with making the personal computer business take off. Lotus 1-2-3 is like VisiCalc and VisiPlot combined, but faster and better. It was the first program to use a working, on-screen help box, and it came with a tutorial on a floppy. Lotus even had a customer support department.

The biggest software application of the day was doing about \$12 million a year in business. Kapor estimated that Lotus's would make \$3 million to \$4 million in its first year of operation. Lotus made \$53 million that first year. The second year was better, with \$156 million; the third-year revenues surged to \$225 million.

And Kapor, the architect of Lotus 1-2-3, had never written a line of its code.

Four years after Lotus 1-2-3 shipped its first product in 1983, he left. "I just bailed. I hated it and I hated myself. I liked starting things, the hands-on aspect of it. But the job was different now. I couldn't handle the responsibility and I didn't like the power. I said to myself, 'Quit, go find out what you want to do with your life.'"

Which is what he was doing in 1989, when he read John Perry Barlow's postings about the visit from Agent Baxter of the FBI. Kapor had also gotten a copy of the Mac source code in the mail. And had received a visit from an FBI agent. That's when he reached out to Barlow.

Kapor and Barlow had met for the first time only a month before, when Barlow had been assigned to interview him. They grokked.

Kapor: "We were kindred spirits."

Barlow: "The first time I ever encountered Mitch, despite a great deal of differences, I felt that both of us had gone up in the same saucer at one time."

They talked about consciousness and the Net and the threat to civil liberties. Both believed they were on the threshold of a Net-borne Great Work, a wiring together of humanity that would

restructure civilization. They talked for three hours, then fostered their face-to-face connection with e-mail, agreeing that they should do something together. But what?

Now, here was the answer: The world was running amok with police agents seizing people's computers without probable cause. There were Phiber Optik and the Boys in New York. Then came Steve Jackson – an adult, for God's sake – who runs Steve Jackson Games, a role-playing games business in Austin, Texas. Federal agents hauled off company computers in a raid, apparently (the Feds weren't saying just yet) because one of Jackson's employees was suspected of unspecified computer crimes. And who knew how far NuPrometheus would go? Was anyone safe? Confused federal agents seemed to be everywhere interrogating people about illicit computer code.

Kapor called Barlow and asked him if it would be OK to drop by. Barlow said sure. Kapor piloted his airplane to a landing strip in Pinedale, Wyoming, and spent an entire snowy afternoon with Barlow, discussing what they could do.

They met again a few months later, at a Chinese restaurant in San Francisco. Stewart Brand, founding publisher of the *Whole Earth Catalog*, was there, as was Jaron Lanier, the dreadlocked virtual reality explorer, and Paul Saffo, from the Institute for the Future, a Menlo Park-based think tank.

Everyone agreed on the need for a civil liberties organization to protect the citizens of cyberspace. The original name that had been floated on the Net was the Computer Liberty Foundation. But that didn't sit right with Barlow, who likened the current denizens of the Well and cyberspace to pioneers who "were able to tolerate harsh conditions, like fur traders."

Barlow came up with a name in that spirit: The Electronic Frontier Foundation.

The Holy Ghost

And now Barlow stares flat-eyed and earnest at the people sipping coffee, finishing the last bits of Rôti supper. He says:

"There are people in this room who I think of as being the genuinely enlightened members of that community. . . . Now is the time you need to start helping out the community in a very material way. EFF has been an enormously expensive undertaking. It cost us three times as much to run last year as it did the previous year. If you get all your money from big corporations, you start behaving like one. We need a lot more support from smaller investors."

At the rear table, facing Barlow, sits a man with thinning long hair that hangs past his shoulders. He wears John Lennon glasses and a flannel shirt, jeans, and sandals. He's the only millionaire in the room who doesn't look like one, not in these clothes, not in the forlorn Mazda sedan he drives. This is the quiet man to whom Barlow has referred only moments before as the "mysterious third co-founder of EFF. The Holy Ghost. John Gilmore."

On a summer day in 1990, John Gilmore was sitting in his closet in the Haight Ashbury, thinking about pushing a button that would cost him \$100,000. Minimum.

Gilmore was sitting in the closet – he really was – a closet that would be dark if not for the glow radiating from the Sun workstation in there with him. The guts of the machine were downstairs, connected by a cable to the terminal at which Gilmore was peering, wondering to himself, "Should I send this e-mail to Barlow or not?"

To: apple!well!barlow, pacbell!well!barlow
Cc: gnu
Subject: Computer Liberty Foundation
Date: Sun, 10 Jun 90 14:50:47 -0700
From: gnu

I've heard rumors about Mitch Kapor funding the defense of liberty on computers but last night I ran into Flash Gordon and he sent me a copy of your tome on Sun Devil, NuPrometheus and Computer Liberty Foundation. Hope you don't mind – you might mark it as redistributable if you want it to be that way. Personally I think it's written well enough that it should get major publication....

Anyway, my fortune is not up to matching contributions by Mitch Kapor and Steve Wozniak – but you can count me in for a hundred thousand or two. I do believe you're right that Sun Devil is a good excuse to get off our butts and set some precedents.

I can spread the word to some of the Libertarian world if desired.

Let me know. Also where to send a check.

John

He stared at the message for a while, thinking about what this all might cost – not only in money, because money didn't mean much to Gilmore. But what it would cost him in energy and commitment and political capital to push the button and send the \$100,000 message.

It was another philanthropist, Andrew

Pranksters

Carnegie, who had given Gilmore his first taste of computing, by funding the little library in the small town where Gilmore grew up in western Pennsylvania. Gilmore had been reading about computers for years before he got his hands on one.

He had gotten through high school doing part-time summer work programming on big mainframes, before getting his first full-time job in the computer business in Washington, DC. During his four-year stint there as a code writer he would sneak onto the Internet's precursor, the ARPAnet through a guest account at MIT's artificial intelligence lab. Gilmore had always been a kind of hacker, had definitely done his time using illicit Net connections or pilfered calling-card numbers to support his Net jones. How else were you going to learn about this stuff?

He also read science fiction, a lot of it, and dropped acid a bunch of times, and along the way developed a real distaste for Authority.

"It was probably drugs more than anything else that made me a Libertarian," Gilmore says.

Then in 1982, a startup called Sun Microsystems was founded in Mountain View, California, and Gilmore was brought on board there from the beginning. The company was looking for someone to port Unix to its larval workstation. Gilmore was the fifth employee hired and Sun's first software guy. Three-and-a-half years later, the company had swollen from 5 to 1,100 employees. Gilmore's Sun stock options had swollen, too – to "a few million dollars."

Gilmore: "Sun had gotten too big and bureaucratic. I'm the kind of person who works best in a less structured environment. I retired, a millionaire before I was 30."

Now, like Kapor, Gilmore had to figure out what, if he could do anything in the world, he would do. "What do you really want?" he asks himself. "I could take 2 to 3 percent of my brain cells and advise people doing startups."

Nah.

Along with his stock, Gilmore took a workstation from Sun, which he set up in the closet – a way of physically keeping his computer life separate from the rest of his life. Like a lot of people, Gilmore had noticed that a computer could be a black hole that sucks you in when you walk by. So he put the box in an out-of-the-way place. Sometimes he just sat there and read his e-mail and toured various Usenet groups, which is how he heard about Operation Sun Devil and Steve Jackson Games and Phiber Optik. And how he came to be sitting in the

closet with a \$100,000 message on his screen.

He pushed the button, of course.

Bad PR

The waiters at the bistro are fanning around the room, removing dinner plates and taking dessert orders. Jerry Berman, EFF's executive director, is tiptoeing around the thorniest moment in EFF history, the move from its birthplace in Cambridge, Massachusetts, to Washington, DC. Berman looks like a thin Buddha; he is, in fact, half Hawaiian and half Jewish (raised Catholic) and a civil-rights lawyer educated at the University of California at Berkeley. And he feels at home in Washington.

"A decision was made by EFF, after a lot of *Sturm und Drang* – which I think is part of net culture too – to move to Washington, DC," Berman says, not elaborating, really, on what all that *Sturm und Drang* was about.

Here's what it was about: In January 1991, the staff of the EFF was called to a small meeting room in the American Twine building, one of those resurrected industrial buildings, sand-blasted and yuppified, that Cambridge is so fond of. Just about everyone knew what was going to happen next, which didn't balm the sting of it, not one bit. Kapor stood up and said EFF was moving its headquarters to Washington. And then he handed out personalized envelopes, explaining what everyone's severance pay would be.

Within moments of the event, word hit the Net, thanks to two eff.org sysops in the basement of the Twine building. Soon the message was replicated to the far corners of Netdom.

A lot of people believed, and believe to this day, that EFF was cutting its connection to regular Net folk by moving to DC. In many ways, "Old Inside-The-Beltway Jerry" as he sometimes refers to himself, came to be seen as the root of all evil, since he precipitated the move.

Now, as the dinner plates are being cleared and the smell of hot coffee wafts across the room, Berman says the move from Cambridge only made EFF better at helping the Little Guy. "It was not our intent to abandon that particular mission, but to strengthen it."

Berman talks a bit about how he came from the American Civil Liberties Union, where he ran a project that surveyed the dangers to personal freedom that could arise in the chaos of the information revolution. He takes credit for "persuading John and John and Mitch and the original board that if they wanted to maintain the freedom and culture of openness on the Net" they'd have to get their hands dirty and

wage their fight in Washington. They'd have to "be involved in wheeling and dealing with people you don't always consider your friends... (in) not always working with people who are pure and good."

David Liddle, who worked on the 8010 Star (the 1981 workstation that incorporated the first friendly user interface and provided inspiration for the Mac) at Xerox Palo Alto Research Center and knows something about getting things done, jumps in. "One doesn't get very much credit for facing these realities," he says. "That is the thing that's made the difference – that's why EFF's voice has gotten heard."

"Internally, that has probably been the source of more struggles than any other clash of two cultures," says Kapor. "For me, going to Washington has been incredibly stimulating... watching how power works. Trying to reverse-engineer the architecture of the Beltway has been interesting."

Denise Caruso, playing journalist, now asks, "At this point, do you have more or less respect for the government? Is there intelligent life in Washington?"

"Right now, a number of us are feeling pretty good," Kapor replies. But, he adds, "large systems, whether the government or private, have an inhumanity to them that's fundamentally intolerable."

"Going to Washington was a real shock," says Dyson. "It is really sleazy and very depressing to realize how this country works. On the other hand, it's very exciting to realize that these are a bunch of people from our generation. In quotes, they 'get it.'"

But, she continues, "After ten to fifteen years in that system, I'm scared they're going to turn into the people they replaced. That's why we have to change the system."

Conversation becomes spirited, stories are being told, digressions occur. People start talking about the Open Platform and what it will be like. Will all content be permitted on the Open Platform? What about cigarette advertising? A smokers' listserv?

Will a rating system be needed?

Dinner finally ends. The board members and their guests wander out, left to ponder whether real political power can come from a modem. Some of them head home, others to hotels.

One of them, Stewart Brand, heads to his boat.

Furthur

Stewart Brand is the only board member who really *was* a Merry Prankster. If you knew Brand back in the days when, higher than the

Pope, he raced a psychedelic bus down a mountain near Taos, New Mexico, you might not recognize him now. Brand was the guy who started the first Trips Festival, a multimedia and acid-dropping fest. He went on to found, edit, and publish the *Whole Earth Catalog* and *CoEvolution Quarterly*. He also co-founded the Well and the Global Business Network, which helps companies like Bell South, Nissan, and ABC News develop business strategies in line with the information revolution.

Brand believes in tools, in giving people instruments that empower them, allow them to control their environment. He is the kind of man who always carries a pocket knife and wears various small leather tool holsters on his belt. The *Whole Earth Catalog* was a tool catalog. The EFF is about empowering people through the tool of networking.

Brand lives in a renovated tugboat in Sausalito and works in a dry-docked shrimp boat. He has a library in a storage container down the pier, and has cut skylights in it so he can work there. A Stanford-educated biologist, Brand just finished a book on how buildings learn.

He is too smart to buy into yet another Utopia.

"One advantage of working with survivors of the '60s is, we've had experience in creating utopias," he says of his fellow board members. "We've had our noses rubbed in our fondest fantasies."

It's a few days after the quarterly EFF dinner, and Brand is sitting on the deck of his (house) boat, intent as an American bald eagle. Over his shoulder you can see the wreck of a ferry boat that was inhabited by Alan Watts some 30 years ago and later by the Zen Center. Software developers live all around Brand now, in other remodeled houseboats that give Sausalito its counterculture charm. You have to work hard to ignore the feeling that one zeitgeist has given way to another.

The old Merry Prankster can't help getting swept up in this new movement, though he knows better.

"I sometimes tingle mildly to Barlow's reference to a Great Work," he says. "There is a truly profound reconfiguring of society occurring, and it is thrilling to be a part of that process."

But then he catches himself and qualifies his optimism: "It's nice to have a domain where one is relatively confident of not doing harm."

More than twenty-five years ago, the Merry Pranksters climbed aboard a bus named Furthur and left California to change the world. They're still at it. ■ ■ ■

e-mail: subscriptions@wired.com

Get **Wired**

call: 800 SO WIRED

Subscribe!

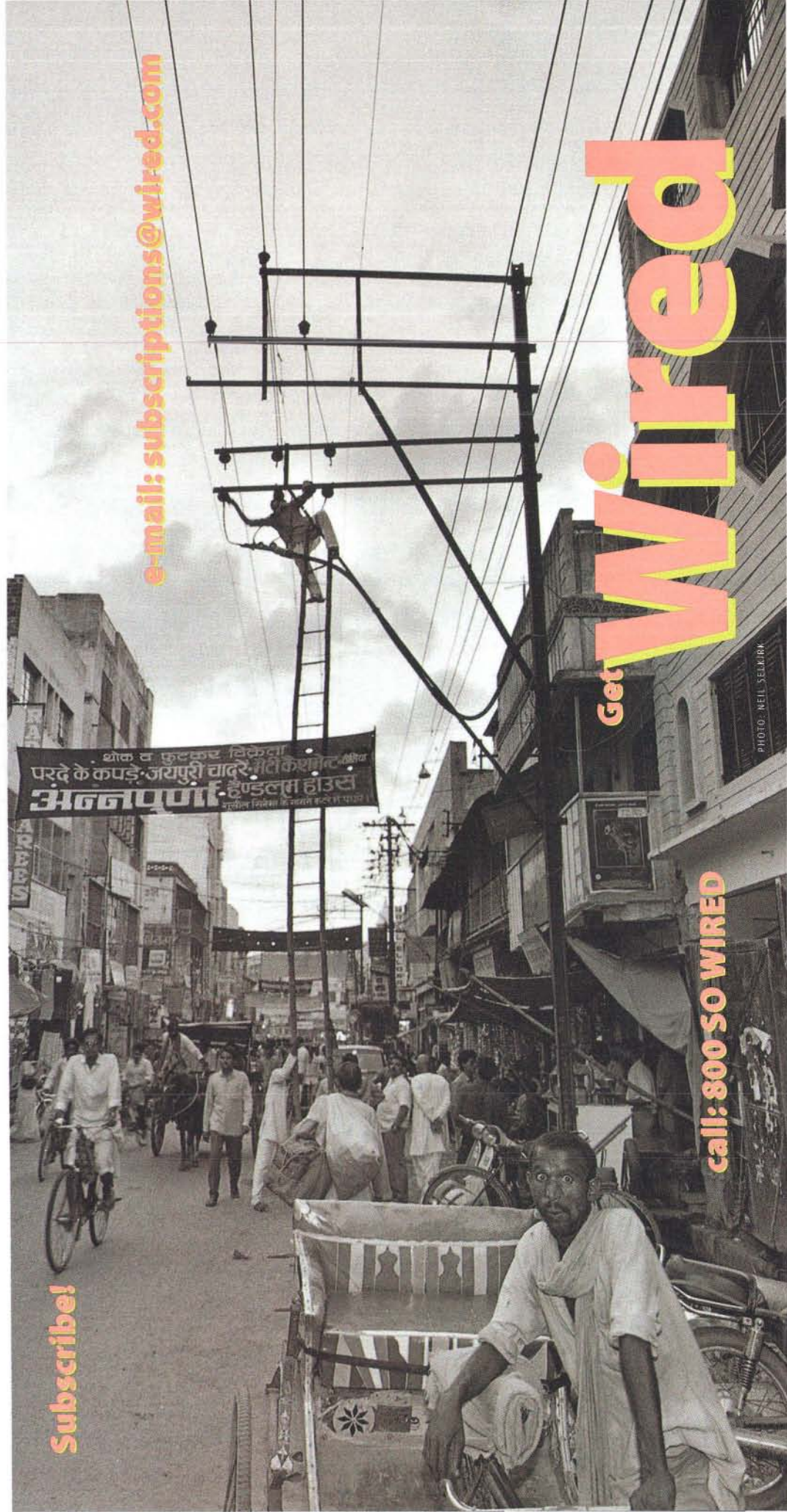


PHOTO: NEIL SELWICK

Clipper

◀ 100 the security you need, and more.

But I can't help pointing out that encryption has been vastly oversold as a privacy protector. The biggest threats to our privacy in a digital world come not from what we keep secret but from what we reveal willingly. We lose privacy in a digital world because it becomes cheap and easy to collate and transmit data, so that information you willingly gave a bank to get a mortgage suddenly ends up in the hands of a business rival or your ex-spouse's lawyer. Restricting these invasions of privacy is a challenge, but it isn't a job for encryption. Encryption can't protect you from the misuse of data you surrendered willingly.

What about the rise of networks? Surely encryption can help prevent password attacks like the recent Internet virus, or the interception of credit card numbers as they're sent from one digital assistant to another? Well, maybe. In fact, encryption is, at best, a small part of network security.

The real key to network security is making sure that only the right people get access to particular data. That's why a digital signature is so much more important to future network security than encryption. If everyone on a net has a unique identifier that others cannot forge, there's no need to send credit card numbers – and so nothing to intercept. And if everyone has a digital signature, stealing passwords off the Net is pointless. That's why the Clinton administration is determined to put digital signature technology in the public domain. It's part of a strategy to improve the security of the information infrastructure in ways that don't endanger government's ability to enforce the law.

Myth Number Four: Key escrow will never work. Crooks won't use it if it's voluntary. There must be a secret plan to make key escrow encryption mandatory.

This is probably the most common and frustrating of all the myths that abound about key escrow. The administration has said time and again that it will not force key escrow on manufacturers and companies in the private sector. In a Catch-22 response, critics then insist that if key escrow isn't mandated it won't work.

That misunderstands the nature of the problem we are trying to solve. Encryption is available today. But it isn't easy for criminals to use; especially in telecommunications. Why? Because as long as encryption is not standardized and ubiquitous, using encryption means buying and distributing expensive gear to all

the key members of the conspiracy. Up to now only a few criminals have had the resources, sophistication, and discipline to use specialized encryption systems.

What worries law enforcement agencies – what should worry them – is a world where encryption is standardized and ubiquitous: a world where anyone who buys an US\$80 phone gets an "encrypt" button that interoperates with everyone else's; a world where every fax machine and every modem automatically encodes its transmissions without asking whether that is necessary. In such a world, every criminal will gain a guaranteed refuge from the police without lifting a finger.

The purpose of the key escrow initiative is to provide an alternative form of encryption that can meet legitimate security concerns without building a web of standardized encryption that shuts law enforcement agencies out. If banks and corporations and government agencies buy key escrow encryption, criminals won't get a free ride. They'll have to build their own systems – as they do now. And their devices won't interact with the devices that much of the rest of society uses. As one of my friends in the FBI puts it, "Nobody will build secure phones just to sell to the Gambino family."

In short, as long as legitimate businesses use key escrow, we can stave off a future in which acts of terror and organized crime are planned with impunity on the public telecommunications system. Of course, whenever we say that, the critics of key escrow trot out their fifth myth:

Myth Number Five: The government is interfering with the free market by forcing key escrow on the private sector. Industry should be left alone to develop and sell whatever form of encryption succeeds in the market.

In fact, opponents of key escrow fear that businesses may actually prefer key escrow encryption. Why? Because the brave new world that unreadable encryption buffs want to create isn't just a world with communications immunity for crooks. It's a world of uncharted liability. What if a company supplies unreadable encryption to all its employees, and a couple of them use it to steal from customers or to encrypt customer data and hold it hostage? As a lawyer, I can say it's almost certain that the customers will sue the company that supplied the encryption to its employees. And that company in turn will sue the software and hardware firms that built a "security" system without safeguards against such an obvious abuse. The only encryption system that doesn't conjure up images of a

lawyers' feeding frenzy is key escrow.

But there's a second and even more compelling reason why the key escrow initiative can't fairly be characterized as interfering with private enterprise: The encryption market has been more or less created and sustained by government. Much of the market for encryption devices is in the public sector, and much of the encryption technology now in widespread use in the private sector was funded, perfected, or endorsed by the federal government.

And not by accident, either. Good encryption is expensive. It isn't just a matter of coming up with a strong algorithm, although testing the strength of an algorithm can be enormously time-consuming. The entire system must be checked for bugs and weaknesses, a laborious and unglamorous process. Generally, only the federal government has been willing to pay what it costs to develop secure communications gear. That's because we can't afford to have our adversaries reading our military and diplomatic communications.

That's led to a common pattern. First, the government develops, tests, or perfects encryption systems for itself. Then the private sector drafts along behind the government, adopting government standards on the assumption that if it's good enough for the government's information, it's good enough to protect industry's.

As encryption technology gets cheaper and more common, though, we face the real prospect that the federal government's own research, its own standards, its own purchases will help create the future I described earlier – one in which criminals use ubiquitous encryption to hide their activities. How can anyone expect the standard-setting arms of government to use their power to destroy the capabilities of law enforcement – especially at a time when the threat of crime and terror seems to be rising dramatically?

By adopting key escrow encryption instead, the federal government has simply made the reasonable judgment that its own purchases will reflect all of society's values, not just the single-minded pursuit of total privacy.

So where does this leave industry, especially those companies that don't like either the 1970s-vintage DES or key escrow? It leaves them where they ought to be – standing on their own two feet. Companies that want to develop and sell new forms of unescrowed encryption won't be able to sell products that bear the federal seal of approval. They won't be able to ride piggyback on federal research efforts. And they won't be able to sell a single unreadable encryption product to both private and government customers.

Well, so what? If companies want to develop and sell competing, unescrowed systems to other Americans, if they insist on hastening a brave new world of criminal immunity, they can still do so – as long as they're willing to use their own money. That's what the free market is all about.

Of course, a free market in the US doesn't mean freedom to export encryption that may damage US national security. As our experience in World War II shows, encryption is the kind of technology that wins and loses wars. With that in mind, we must be careful about exports of encryption. This isn't the place for a detailed discussion of controls, but one thing should be clear: They don't limit the

encryption that Americans can buy or use. The government allows Americans to take even the most sophisticated encryption abroad for their own protection. Nor do controls require that software or hardware companies "dumb down" their US products. Software firms have complained that it's inconvenient to develop a second encryption scheme for export, but they already have to make changes from one country to the next – in language, alphabet, date systems, and handwriting recognition, to take just a few examples. And they'd still have to develop multiple encryption programs even if the US abolished export controls, because a wide variety of national restrictions on encryption are already in place in countries from Europe to Asia.

Myth Number Six: The National Security Agency is a spy agency; it has no business worrying about domestic encryption policy.

Since the National Security Agency has an intelligence mission, its role in helping to develop key escrow encryption is usually treated as evidence that key escrow must be bad security. In reality, though, NSA has two missions. It does indeed gather intelligence, in part by breaking codes. But it has a second, and oddly complementary, mission. It develops the best possible encryption for the US government's classified information.

With code breakers and code makers all in the same agency, NSA has more expertise in

cryptography than any other entity in the country, public or private. It should come as no surprise, therefore, that NSA had the know-how to develop an encryption technique that provides users great security without compromising law enforcement access. To say that NSA shouldn't be involved in this issue is to say the government should try to solve this difficult technical and social problem with both hands tied behind its back.

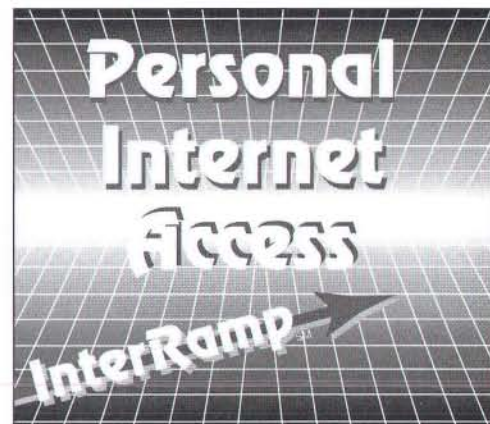
Myth Number Seven: This entire initiative was studied in secret and implemented without any opportunity for industry or the public to be heard.

For more information on the Clipper standard you can access *Wired's* Clipper archive via the following *Wired* Online services.

- *Wired* Infodroid e-mail server: Send e-mail to infodroid@wired.com containing the words "send clipper/index" on a single line inside the message body.
- *Wired* Gopher: Gopher to gopher.wired.com and select "Clipper Archive."
- *Wired* on World Wide Web: <http://www.wired.com> select "Clipper Archive."
- *Wired* on America Online: The keyword is WIRED.
- *Wired* on the Well: Type "go wired" from any "OK" prompt.

This is an old objection, and one that had some force in April of 1993, when the introduction of a new AT&T telephone encryption device required that the government move more quickly than it otherwise would have. Key escrow was a new idea at that time, and it was reasonable for the public to want more details and a chance to be heard before policies were set in concrete. But since April 1993, the public and industry have had many opportunities to express their views. The government's computer security and privacy advisory board held several days of public hearings. The National Security Council met repeatedly with industry groups. The Justice Department held briefings for congressional staff on its plans for escrow procedures well in advance of its final decision. And the Commerce Department took public comment on the proposed key escrow standard for 60 days.

After all this consultation, the government went forward with key escrow, not because the key escrow proposal received a universally warm reception, but because none of the proposal's critics was able to suggest a better way to accommodate society's interests in both privacy and law enforcement. Unless somebody comes up with one, key escrow is likely to be around for quite a while. That's because the only alternative being proposed today is for the government to design or endorse encryption systems that will cripple law enforcement when the technology migrates – as it surely will – to the private sector. And that alternative is simply irresponsible. ■ ■ ■



PSI, the leading commercial Internet access service provider in the U.S., now offers InterRampSM, personal Internet access via v.32bis and ISDN for your PC, Macintosh[®] or workstation.

InterRamp Service Features:

- PPP dialup access to the Internet; through local access points
- A POP3 electronic mailbox for receiving ASCII or multi-media messages
- Unlimited USENET News Included

Special Offer:

- "Pioneer Preference" \$29/Month*

*Restrictions apply. Contact a PSI Sales Representative for details.

**Call PSI at
1.800.psi.3031
(703.709.0300)**



Performance Systems International, Inc.
510 Huntmar Park Drive
Herndon, VA 22070
FaxBack Info: 1.800.FAX.PSI.1
Internet E-Mail: info@psi.com

Sony

◀ 98 Then, as the global economy slowed in the early '90s, Sony's debt soared, and Tokyo began to put serious limits on the studio's spending. But they at least did what Tokyo had asked: They grew the studio by as much as 25 percent per year. There were disappointments on the way—Schwarzenegger's *Last Action Hero*, supposed to be the blockbuster of all time, lost the studio over \$100 million in one quarter—and turmoil in the executive suites. In the spring of 1991, after only a little more than a year at the helm, Peters was eased out of the job into an exclusive production deal, leaving Guber solely in charge.

Yet despite the wrong bets, Sony's studios, taken as a group, have led the US industry box office race for the past three years, with films such as *Basic Instinct*, *A League of Their Own*, and *A Few Good Men* (all of which made over \$100 million in the US market alone). In the process they pumped the US market share of Sony's movie groups from under 14 percent to just under 20 percent, with revenues last year of \$920 million.

Within Japan, Sony is seen as somewhat disreputable, a little pushy, a little flashy, as, frankly, rather American.

Something similar has happened in the music market: In 1993, Sony Music beat Time Warner music divisions out of the top market-share spot, gaining operating profits that have increased 235 percent since Sony bought the company.

How much of this is actual profit—or a reasonable return on investment, especially considering the debt Sony racked up to buy the business—is another question, one on which experts disagree. "They ain't making any money on the entertainment side," says Paine Webber analyst Chris Dixon. "That makes it difficult for them to find the capital they need to integrate their products across all the systems they are in."

A. Rama Krishna, of Alliance Capital Management in New York City, counters, "As long as your profits cover your interest expense, there is no such thing as an optimal capital structure."

Syn City

But the "S-word," the word that Sony has used for almost six years now to explain its entertainment spending spree, is not "solvency" but "synergy." The parts are supposed to interact in ways that

make them far more valuable together than apart.

Sony executives point proudly to the ways that they are beginning to knit the pieces of the business together, using their broadcasting and electronics expertise in the business of producing films (see "Hot Tech," page 96), shoving the films into the satellite pipeline, and showing them in theaters—and turning them into computer and set-top games. Starting with *Bram Stoker's Dracula*, Sony detailed crews to film game sequences side-by-side with the movie sequences—on the same sets, using the same actors or stunt doubles—for CD-ROMs. And some flow has gone the other way. When Sony Electronic Publishing debuted its new CD-ROM game, *Ground Zero Texas*, it immediately got calls from the Sony studios, wanting to nail down the film rights.

Sony Electronic Publishing is another American growth story, a hardware-and-software group that produces Sony titles, produces other people's titles, and even does contract CD manufacturing for other people's productions. A business started from scratch, it makes half of all the CD-ROMs produced in the US. According to Olafsson, the division pressed its first in 1986, its

millionth in 1990, its ten-millionth in 1992, and its fifty-millionth late last year—a steep curve. The curve will likely grow steeper if Sony succeeds with the 3DO-Nintendo-Sega-killer company it has recently founded in Japan to design and manufacture 32-bit, parallel-processing, CD-ROM-based set-top boxes.

In the pursuit of the holy grail of hardware-software synergy, Sony has poured its money, talent, and attention into the United States at an increasing rate—and the push has not been limited to the entertainment businesses. Even the traditional Sony box-making businesses have gained an American flavor as they expand into product categories where much of the action is: software, the infobahn, and high-tech helpers for the industries in which America leads, including:

► Computer-generated special effects, high-definition television (HDTV) post-production techniques, 3-D theater sound, point-and-click video editing, and multichannel digital uplink facilities for the movie, television, and cable industries.

► Advanced image storage and retrieval for medical use.

► Super-high-definition displays for air traffic control.

► Cheap videoconferencing modules for home computers.

"In some areas," says SEMA president Ando, "the US part of Sony is just plain better at it. The technical trends in the two countries are very different. The US is much more advanced, especially in telecommunications." With so much of its market here, Sony must move more of its work here because, Ando says, "we must shorten the cycle time on our products."

Though basic research, the kind that earned a Nobel Prize in physics for one Sony scientist, remains in Japan, applied research and development efforts in the US have multiplied like wild rabbits. Beginning with an advanced video group in Palo Alto in the late '70s, Sony has grown twenty research groups across the US. "Eventually," says Ando, "we will even be doing basic research here."

The Truly Global

This kind of center-and-edges dance has helped make Sony one of a handful of truly global companies. Most people's short list probably would include AT&T, IBM, Xerox, Sony's rival Philips, perhaps Proctor and Gamble, Asea Brown Boveri, and Glaxo Pharmaceutical. No other Japanese company appears on the short list—not Matsushita, a far more conventional company, and certainly not the car companies, which manufacture and design overseas, but maintain rigid control from the center. "Tell me how many American executives you have heard of at Matsushita or Toyota," Rama Krishna asks.

All these shifts—toward the edges, toward a distributed structure, toward the US—have roots in Sony's own history. Every organization has a "story," something between a culture and a soul, that powers everything it does. If we search for Sony's core, its story, we will find at least a part of it in the image of Morita stumbling off a Boeing Stratocruiser in New York City in 1953, in the land of the conqueror, eager to license the transistor from Western Electric. The seven-year-old company he had founded with Masaru Ibuka was then known as Tokyo Tsushin Kogyo Kabushiki Kaisha. He was only 32, naïve about international business, awed by the sheer size of the United States, but determined to make "Tot-suko" a force in the world. On that first visit he walked Fifth Avenue, imagining a day when he could put a showroom there. Only seven years later he founded Sony Corporation of America, and in 1962 he moved his family to New York for

two years to get the new corporation going.

Morita recently suffered a stroke that, it appears, ended his working life, but the eager willingness he and Ibuka shared to move out into a world that the Japanese had traditionally avoided has become a part of the "story" that makes Sony atypical for a Japanese firm. Much more than American companies, Japanese companies tend to operate in lockstep, in *yokonorabi*. Philip Anderson of Dartmouth's Amos Tuck School of Business calls this quality "absolutely characteristic" of Japanese companies. "If Sony tomorrow set up an R&D operation in Zaire, the others would do it within six months."

"Sony is unusual," says Anderson, "in that it has no ties to any of the *keiretsu*, the great industrial combines such as Mitsui, Mitsubishi, or Sumitomo." This makes Sony "the least Japanese of them all. The ties in the *keiretsu* [meaning, literally, systems connected] are all Japanese-to-Japanese, informal, and personal. It is hard for [those companies] to build a genuinely intimate relationship outside the *keiretsu*. It's a structural impediment to being anything other than a Japanese company with foreign outposts. Sony, on the other hand, is far more capable of forging those kinds of ties with non-Japanese."

At the core of Sony lies a kind of desperation to be first to the market (think Walkman) with something that strikes fire. For other companies, being second is much more comfortable: If you're first, maybe you've got the wrong idea – maybe the others won't follow your lead.

Within Japan, Sony is seen as somewhat disreputable, a little pushy, a little flashy, as, frankly, rather American. So even in Japan, Sony has long attracted the kind of people who are comfortable with the more open American style. As Ando points out, Sony people don't approach conflict in the closed, face-saving Japanese style: "We have open arguments. It's very different from most Japanese companies." The company deals with outsiders in a similarly nontypical fashion. Jim Fiedler, president of Sony Dynamic Digital Sound, the Sony company that produces a new 3-D theater sound system, used to be vice president of MCA, owned by Matsushita. He says, "I chose to come here, because Sony is open to ideas that were not necessarily invented here. *Gaijin* have an opportunity at Sony. That's not common in other Japanese companies. It wasn't that way at Matsushita."

When one critic said that Sony was willing to be the guinea pig for new market ideas, Ibuka sent live guinea pigs to all the company's top officers. Sony's goal, according to Morita, is "to make our products obsolete before somebody else does it for us." With each new idea (such as

the CD, the 3.5-inch floppy, and the MiniDisc), it gathers partners much as President George Bush did before heading into Desert Storm. After hiring music-industry veteran Robert Sherwood to convince competing music companies that MiniDisc was a bandwagon worth jumping on, Sony sold 400,000 of them in the first year – twice the growth rate of CDs.

Sony Tarot

For all this, the future of Sony is not obvious. If its goal could be expressed in one word, it might not be *keiretsu*, "systems connected," but *commuretsu*, "communications connected." That is, Sony wants to be the first communications conglomerate engaged in both ends of the information pipelines of the future, from silicon to Schwarzenegger. But because of the laggard Japanese economy, the rise of the yen, and its heavy debt, Sony's overall growth has slowed in recent years. Critics point to the \$12 billion debt it has run up and claim that it will have to sell off the studio and music businesses to survive.

"We will see an exodus from Hollywood," says Makio Inui, of the Tokyo firm Kleinwort Benson. "They will be desperately trying to get out."

"All I really need from Tokyo is official Sony parts numbers. The rest I can scramble up here or somewhere else in Sony of America."

Others claim just as vehemently that, all things considered, they have done very well.

"Yes, they have a lot of debt," says Alliance Capital's Rama Krishna, "but if they sell some of it they will get three times what they paid for it.... I would rather be a shareholder of Sony than any other company that has gone into Hollywood."

Critics like Inui claim that these businesses never made much sense in the first place and never showed any of the vaunted "synergy" that Sony was looking for.

"The only possible reward for buying a studio is to dictate the next VCR format," says Inui. If that was the point, then the move seems hopelessly ill-conceived, given the myriad ways that movies and music will be delivered in the future.

But this is an extremely narrow view of synergy. Something broader is going on here. "Sony is a design company first," says Dixon. "They have an extraordinary international brand that represents high quality and great design. The issue is how you take that design sensibility of quality and service and make it work in all these disparate parts of the company."

A test of this synergy will come when Sony introduces its competitor to 3DO, Sega, and Nintendo next year (see "Hot Tech," page 96). The CD-ROM-based game box is "incredible," according to an industry executive who has seen it. But it is yet another entrant in a crowded field, and it will challenge Sony's ability to draw together its expertise in hardware, software, distribution, and marketing.

Roaming its factories and offices, talking to scores of executives, engineers, and workers, one gets the distinct impression that Sony seems to have absorbed its deeply different acquisitions and begun the long process of mind-melding the hardware engineers with the creative types in Hollywood. The synergy is palpable in an orientation toward technological advances, technical excellence, and presentation.

Sony's deep draw toward its new businesses is likely to accelerate when and if it moves into the cable and telephone service business – as most observers expect it to. Schulhof has been meeting with potential partners, playing with the possibility of offering a telecommunications partner a minority share in Sony's music and film businesses. For Schulhof, the big question is

"Who can give us an alliance in electronic distribution with complementary strengths?" He won't comment on the talks, but allows that the chiefs of every phone company in America have met with him. He is searching for a way to raise capital free of Tokyo's debt woes. But despite Sony's critics, he shows no sign of thinking that going Hollywood was a mistake and no willingness to get out of the movie and music businesses.

"They have lots of problems," says Dixon, "dealing with a core consumer electronics business in a difficult environment on an overleveraged capital base with a somewhat confused strategic vision." But he adds, "at the end of the day it comes down to brand."

In 1990, a study by San Francisco-based corporate image specialists Landor Associates matched people's awareness of a brand with their esteem for it. Sony showed up second on the list, with Coca-Cola, Mercedes, Kodak, and Disney among the top five. If that unity shows through in its new American ventures, Sony's *commuretsu* could become a reality within a decade. ■ ■ ■

Rage

◀ 105 University at San Luis Obispo, a two-hour drive up the coast. After his first year, he switched his major from engineering to computer science. Later, on job applications, he would list the programming languages he had learned: Pascal, Fortran, Cobol, Basic, C+. He spent most college summers working with an environmental group for the Navy at Port Hueneme, once winning a US\$300 award for his contribution to a steam energy project. The certificate was still hanging on his bedroom wall the day he died.

While Alan performed well at his summer job, he struggled in school. He had suffered from dyslexia since childhood, but pride kept him from seeking help. "He never told anybody," his mother says. "He didn't want people to feel sorry for him." As a result, he often had trouble finishing tests on time. He barely maintained a C average in college and had to repeat a number of courses he failed on the first try.

As Alan labored to complete his education, tragedy struck at home. Bill Winterbourne had fallen into a deep depression. A new school administration had reduced his responsibilities in the crafts department, and he feared he was being eased out of the teaching position he had held for more than 30 years. The prospect of losing his job was more than he could bear. Early on the morning of July 12, 1984, he went into his home studio and swallowed a lethal dose of a toxic liquid used to glaze pottery.

Alan was stunned by his father's suicide. But Ila says that he never blamed his father for giving up hope. "If Alan was angry about it," she says, "he never showed it."

Alan finally graduated from Cal Poly in 1985. It had taken him seven years to earn his degree in computer science, but his perseverance had paid off: Three companies were offering him jobs. Ila, still coping with the emotional and financial shock of widowhood, urged him to take the one that was in Ventura County — Alan could live at home and commute to work. Knowing his mother could use the company, not to mention the rent he insisted on paying her, Alan made his choice: He would go to work for the Northrop Corporation.

In late August 1985, Alan Winterbourne began his daily commute to the Northrop facility in Newbury Park. He was 25 years old, clean-cut, and thrilled with the prospect of beginning his career as a \$50,000-a-year systems engineer at one of the country's leading aerospace firms. "He was so excited," his moth-

er recalls. "He'd go out of here with his new leather briefcase, in his three-piece suit, all spit and polish. The only thing he lived for was to work and get ahead, to be a success."

Alan toiled in the division that made target drones used in the testing of anti-aircraft systems. As a systems engineer, his task was to design software; programmers would then write the code. In his initial job review, Alan's performance was rated "very good" in three categories and "good" in the other two.

It proved to be a brief honeymoon. About two months after he started at Northrop, Alan was abruptly transferred to the group working on Tacit Rainbow, a troubled secret missile project so highly classified at the time that its mere existence could not be acknowledged publicly. Immediately, his work began to suffer. In a second job review, his new supervisor, Val Egle, wrote: "Since assignment to Tactical Products

**He clipped want ads,
hammered out letters
on his Mac,
made
appointments,
and dusted off his
pinstripe suit for interviews.
It became the daily routine
for the rest of his
life.**

Division, Mr. Winterbourne has exhibited considerable anxiety and difficulty in adjusting to his new job assignment. Considerable time and effort has been expended by his supervisors to alleviate Mr. Winterbourne's concerns."

The true nature of those concerns remains a mystery. Egle, who still works for Northrop, says Alan's anxieties stemmed from difficulty adjusting to the security requirements of his new physical working environment — a closed, windowless room with electronic locks on the doors. But to his family and others, Alan related a far more sinister story. He claimed he was being harassed and intimidated by his co-workers. He believed his phone was tapped and that he was being followed.

Eventually, he began to fear for his life. He told his mother that someone tried to run his car off the road. Later, after leaving Northrop, Alan testified at his subsequent unemployment hearing that co-workers would walk by his cubicle, point at him, and pretend to "pull the

trigger." A supervisor, he went on, once told him that "there are three ways out of this organization — resignation, firing, or death," which Alan interpreted as a threat.

At the time, Alan's family found Alan's claims difficult to believe. "I just couldn't believe it," Ila says. "I just thought he was hypersensitive. I told him they're just joking if they do something like that. I mean, people can't do that. This is the United States of America."

But Alan didn't think it was funny at all. Without telling his family, he bought a pistol — the same gun he would use eight years later at the unemployment office. He applied to the police department for a concealed weapon permit but was turned down because he was unwilling — or unable — to explain why he wanted it.

Alan never told anyone, not even his family, exactly why he thought people at Northrop would want to hurt him — he claimed his security oath prevented him from discussing it. But he hinted vaguely that he had made some dark discovery that put him at odds with the company. "They're working on terrible things at Northrop that would kill millions of innocent people," he would tell his sister Carol. "Things you can't imagine." In the letter to his Congressional representative included among the documents he left behind the day he died, Alan alleged that federal laws were being broken at the company and requested a congressional investigation into the matter. Nothing came of his allegations.

Val Egle insists Alan never raised any of those issues with him, nor did he complain about being harassed or threatened. But whatever the reason, Alan had to get out. His mother urged him to wait until he found another job before quitting, but he told her that would be unethical — his employment agreement prohibited him from having contact with other companies. On February 14, 1986, he cleaned out his cubicle and left Northrop for the last time. But the experience at Northrop never left him.

Alan plunged into his search for a new job right away. He clipped want ads, hammered out letters on his Mac, made appointments, and dusted off his pinstripe suit for interviews. It became the daily routine he would follow for the rest of his life.

At first, Alan didn't think finding a new job would be too difficult, as less than six months earlier he had had his pick of three. His appearance was professional — his hair was short and his mustache neatly trimmed — and he now had some experience to go with his degree. And the military buildup under Ronald Reagan put people with his skills in demand. 138 ►



**DO NOT ENTER THIS CONTEST IF YOU WANT
HOME SHOPPING, ENCYCLOPEDIAS, AND VIDEO
GAMES TO DEFINE THE INFORMATION
SUPERHIGHWAY.**

The personal computer is more than 15 years old. At first it was a number cruncher, then a word processor. It has evolved into a crucial tool for filmmakers, writers, musicians, animators, photographers and graphic designers. As the artistic community becomes more familiar and intrigued with the available technology, we are witnessing the birth of a new genre; works created on computers and more importantly, for the computer. We are seeking work for a new time and in a new context.



A collaboration of INTERVAL RESEARCH, VOYAGER, and WIRED

A CALL FOR ENTRIES: 3 Awards of Merit \$5,000 Each.

Objective: To support creative people using computers for original works. **Deadline:** Postmark June 30, 1994 **Entry Requirements:** Digital Works, ANY LENGTH ANY FORMAT ANY SUBJECT.

Send entries to: NEW VOICES, NEW VISIONS Voyager

578 Broadway Suite 406
New York, NY 10012

e-mail voyager@PHANTOM.COM

Alyce Dissette, Director

Trevor Kaufman, Project Coordinator

Tel: (212) 431-5199 Fax: (212) 431-5799

Judges:

**LAURIE ANDERSON, NICK BANTOCK, MICHAEL FRANTI, WILLIAM GIBSON, TERRY GILLIAM,
JENNY HOLZER, ALLEN HUGHES, MIRA NAIR, HOMER FLYNN, ART SPIEGELMAN.**

Rage

◀ 136 He couldn't believe it when nobody wanted to hire him. As the months passed, Alan decided that Northrop must be blackballing him. When the company contested the unemployment claim he filed six months after leaving, he saw it as further proof that Northrop had it in for him. Alan testified at an appeal hearing that he was forced to resign for reasons of "personal safety" and repeated all his vague charges, but the judge ruled against him. (Never one to give up easily, he pursued the matter all the way to the U.S. Supreme Court, which in 1990 declined to hear the case.)

The defeat at the unemployment office only fueled Alan's determination to succeed on his own terms. "He had to do everything his way," his sister says. "He had to prove that he could do it." He told Carol that people at Northrop warned him that he would never get another job comparable to the one he left; in defiance, he resolved not to accept a new position unless it paid as well and had the same perks as his old one. "If he said something," Carol recalls, "then that was going to be it, for all eternity."

Even his grooming became a matter of principle. Alan decided that he would let his hair and beard grow as a way of marking the time that he had been without work. He resolved to cut his hair and shave only after receiving his first paycheck at a new job. His mother argued that it would hurt his chances of getting a job, but he wouldn't listen. If any employer didn't want to hire him because of his appearance, well, that was discrimination. His blinders were on too tight for him to see it any other way.

Alan stepped up his job hunt as he entered his second year without work, signing on with employment agencies, placing ads in the newspaper, attending job fairs. He enrolled in job-training programs that would pay half his salary to any company that hired him. He applied for every computer-related position he could find. If he was rejected by a company once, he would apply again the next time they advertised an opening. None of it worked.

While Alan often stressed his "stubborn fortitude" in letters to employers, the professionals who were trying to help him get work found his willfulness exasperating. "He was sabotaging himself," says job developer Joanne Norton, who saw Alan when he first enrolled in a federally funded job program in 1987 and again a couple of years later. "He could be kind, polite, and gentle, but when it came to changing his looks so that he could fit in better, he'd become angry, agitated, and determined."

Even more vexing, says Norton, was that Alan actually turned down several jobs because they weren't as attractive as the one he had when he was first hired at Northrop. He declined one well-paid computer position because it didn't have a window office or a parking space for him, another because he wouldn't cut his hair.

Alan still blamed Northrop for all that was wrong with his life. His family began to wonder if maybe there wasn't something to his claims. He had never been known to lie or exaggerate before, and until he started working at Northrop, he never exhibited signs of anything resembling paranoia. His story seemed even more plausible after the family gathered to watch a 1987 episode of *60 Minutes* exposing fraud and corruption in Northrop's development of the MX missile. "Alan wasn't surprised at all," Carol says. "After that, I didn't know what to think."

A letter written that same year to Rex Winters,

**Even more vexing,
says Norton, was that
Alan**

**actually turned down
several jobs**

**because
they weren't as attractive
as the one he had when he
was first hired at Northrop.**

a supervisor at his old summer job with the Navy, reflects Alan's confusion and frustration:

"I am still trying to recuperate from the severe negative circumstances that occurred at my last employment. I sometimes have a hard time explaining these experiences so as not to be in conflict with the law, but I also do not want to portray myself as being too rigid or possibly crazy I have had a number of individuals say they will shoot me. I never thought that I could get caught up in such terrible circumstances in this day and age. It is easy to understand how people may have a hard time believing me, or that I may respond unduly or rashly ... but all I can say is that I am still a very hard worker and continue daily to try to overcome my initial bad start in the job market."

Alan's struggles were compounded when suicide again claimed the life of someone close to him. Since returning home from college, Alan had grown close to a young woman named Linda Dong. Although Alan always

denied to his family that he and Linda were romantically involved, he later told his mother he would have married her. But Linda, who had been treated for manic depression, was increasingly despondent over family problems. After dinner with her mother one night in May 1987, she put on her pajamas, crawled into bed, and shot herself in the head with a .38 caliber pistol. She was 25 years old.

Alan kept his feelings about Linda's death to himself. He simply placed fresh roses on her grave twice a year, and he carried her picture in his wallet for the rest of his days.

Despite the setbacks in his life, Alan tried not to let the frustration take over completely. He had played the stock market since he was a kid, and he still made a few thousand dollars a year trading options, enough to keep him going while unemployed. He jogged, rode his bike, and went hiking whenever he could. He took care of the orchids at his uncle Art's house, and when Art was stricken with the heart ailment that would eventually take his life, Alan took care of him, too.

Occasionally, he would go target shooting with a neighbor in the empty hills above Ventura. But while his cousins went hunting, Alan restricted himself to plinking at bottles and cans — he could never bring himself to kill anything.

On Sundays, he regularly attended Trinity Lutheran Church with his mother. "He seemed to have a deep faith," says Pastor Dave Hall. "I think he was very principled on a number of things." Twice a year, Alan would volunteer to spend a night in a Ventura homeless shelter, answering phones and visiting with clients. From the time he was a teenager, he raised money for the homeless in the annual church bike-a-thon, a grueling 100-mile ride that takes cyclists from downtown Ventura to a far mountain top in a single day; in seventeen years, he only missed one ride.

But try as he might, Alan couldn't escape the fact that the pile of rejection letters was growing ever higher. Most personnel directors turned him down after receiving his application and noting the mediocre grades, weak job history, and poorly written letters of interest. Others met with him but were turned off by the way he presented himself. "He was a space cadet, there's no nice way to say it," says Phillip Brandes, who interviewed Alan for a software engineering job at Comptek Research in 1989. "Everyone that talked to him was struck by the fact that he didn't seem to have a grasp of what the professional environment was. He struck us as being a harmless eccentric." 140 ▶



HEMP CAN SAVE THE WORLD.

CANNABIS HEMP is known today primarily for its widespread use as a recreational drug: Cannabis flowers when smoked or ingested produce euphoric effects. Current gross domestic sales of marijuana are estimated at \$30 billion...

What is less well known is that hemp is an invaluable and environmentally friendly resource in many other areas as well. For example: "One acre of Hemp will make the same amount and quantity of paper as four acres of 20 year old trees without the need for chlorine in the bleaching process, creating no toxic dioxin pollutants."

When mature, Hemp is the toughest natural fiber known; denim was originally made from Hemp sailcloth; canvas take its name from the Dutch word for Cannabis (Canvass).

Hemp can also be used as a fuel. Old USDA reports show Hemp gives 4-10 times the yield of cellulose per acre compared to corn. Modern methods of converting cellulose to methanol make this a viable and pollution free method for powering cars, trucks, buses, etc.

Equally important are the uses of Hemp for food and medicine. Cannabis seeds yield as much edible oil per acre as sunflowers; the pressed pulp is second in protein only to soy beans. Federal regulations in the U.S. prohibit research into additional beneficial effects, however Cannabis is well known to be helpful for glaucoma, asthma, anorexia and stress, potentially replacing half the prescriptions written today. And, "...there are simply no credible medical reports to suggest that consuming marijuana has

caused a single death..." Too bad the same can't be said of alcohol or tobacco.

Today there is growing support for taking the 'crime' out of Cannabis. U.S. District Judge Vaughn Walker notes, "I make no bones about my personal view that the best course of action for us to take is exactly the same course we took after prohibition. And that is decriminalization."

Help save the planet. Help legalize Hemp! Cannabis Action Network (CAN) works with over 250 organizations worldwide. Call or write today for information on events in your area and how you can help.

Cannabis Action Network
2560 Bancroft Way #46, Berkeley, CA 94704
1 800 425.HEMP or 1 510 486.8083

Supporters of legalization or decriminalization: Hon. Kurt Shmoke, Mayor of Baltimore, MD; Hon. Elihu Harris, Mayor of Oakland, CA; Hon. Frank Jordan, Mayor of San Francisco, CA; Hon. Carrie Saxton Perry, Mayor of Hartford, CT; Nicholas Pastore, Chief of Police, New Haven, CT; Tod Mikuriya, M.D., Psychiatrist; Ethan Nadelman, Ph.D., Assistant Professor, Princeton University; Dr. Lester Grinspoon, Ph.D., Professor Harvard University; Milton Friedman, Ph.D., Professor, Economist, and Nobel Prize winner. *U.S. Dept. of Agriculture, Bulletin #404; ** Francis L. Young, Administrative Law Judge.

POSITIVELY
NRG

Rage

◀ 138 Stymied in his search for a computer job, Alan began applying for other kinds of work. He responded to ads for technical writers, despite the fact that his dyslexia resulted in spelling, grammar, and syntax mistakes that often made his letters read like those of a poorly educated man. He entered a brokerage training program and became licensed to sell options but was forced to leave after a month – he failed to sign up a single client. He took a certification class for security guards at Ventura College, then applied to the California Highway Patrol and the Oxnard airport security department; in both cases, he couldn't get past the written exam. He applied for some jobs for which he had no experience at all – park ranger, telephone line installer, district attorney's investigator – with predictable results.

In 1990, Alan's search for work even led him to run for Congress against Robert Lagomarsino, a popular incumbent who was unopposed in the Republican primary. "I'm unemployed," Alan told reporters. "I think it would be a good job." But it wasn't serious – he knew he wouldn't win. Alan just believed that voters should always have a choice. He wound up with 11 percent of the vote, which pleased him to no end.

The following year, he threw his energy into a different kind of civic campaign: The city had installed some stop signs on a quiet intersection near his home, and Alan wanted them removed – they slowed him down when riding his bike. With characteristic zeal, he spent the next three years circulating petitions, writing letters, and pestering officials. Nazir Lalani, a city traffic engineer, estimates his office spent over 2000 staff hours dealing with his complaints – they had to start a "Winterbourne" file to hold all the letters he wrote.

"He was totally obsessed with removing the stop signs," Lalani says. "If there was an argument with all the facts in the world, but it didn't fit with what he believed, then he just blew it off. I decided about two years ago that I wasn't dealing with a rational person."

As Alan entered his eighth year of unemployment in 1993, he needed a job more than ever. He was 33 years old, broke, and deeply in debt. He had inherited \$10,000 after his uncle died in 1989, but it was gone, eaten away by the costs of living and bad bets in the options market. Later, his family learned he had been living off credit cards, covering the balance on one with a cash advance from another.

Despite his humiliation, Alan struggled to

keep his pride intact. He would do odd jobs for neighbors and repairs for his mother, or he would baby-sit his sister Carol's new baby, Christopher, but he would never take any money in return – at least not directly. "You could give him money," says Carol. "But everything had to be a gift or a giving kind of thing."

Alan persisted in his methodical search for work throughout the year. He applied in vain to several engineering firms in the area. He signed up for a job-referral service at the Oxnard unemployment office in the summer, but nothing came of it. He took a brokerage test at Merrill Lynch in the fall and stopped by every week thereafter to see if there was anything available for him. There was not.

There were signs of his growing depression. He had put on weight and was out of shape. For only the second time since he was a teenager, he didn't participate in his church's annual bike ride – he was disgusted with himself after fin-

Author Mark Nollinger will appear in the Wired Auditorium to discuss this case's implications on Wednesday, June 15, from 9 to 10 p.m., Eastern Standard Time. From AOL type the keyword "wired" and click on the Wired Auditorium icon.

ishing in the back of the pack the last two years in a row. At Thanksgiving, a cousin thought he seemed withdrawn. It was always a hard time of year for him, since he never had money to buy Christmas gifts for his loved ones. And the seventh anniversary of his denied unemployment appeal was coming up the following week.

But there was a glimmer of hope. In late November, Ila, who now works as a secretary for the Navy in Port Hueneme, arranged for Alan to see a former supervisor of hers about an opening for a systems engineer with a private firm that does contract work for the military. Sandor Geiszinger met with Alan and was impressed – they even joked about his hair. Geiszinger told Alan that although they would still have to meet with the PRC Corporation's senior engineer on the project, things looked good.

Alan's second interview was set for Tuesday, November 30. But a few days before the appointment, a death in the engineer's family forced

him to reschedule the meeting for the following Tuesday, December 7. It was a fateful delay.

Ila left for work early on the morning of December 2, while her son still slept. As far as she knew, Alan would spend the day like all his other Thursdays: checking the want ads, making some phone calls, maybe sending out a résumé or two, then baby-sitting his nephew in the afternoon. At about 10:30 a.m., she called home to tell him the tenant at his late uncle's house was going to be late with the rent. Alan gave no sign that anything was wrong. "He said OK," Ila recalls, "and that was it."

A half-hour later, Alan packed up his box full of applications and rejection letters, carefully placed the Northrop documents in the manila envelope, loaded his guns, and set off in his old Dodge for the Oxnard unemployment office.

After it was all over and Ila had returned to work, Geiszinger asked her why Alan couldn't have waited just a few more days. "Maybe he was spooked," she says now. "Maybe he was afraid he'd get the job."

The victims were buried first. Flags flew at half-mast throughout Ventura County, as James O'Brien, Phillip Villegas, Anna Velasco, and Richard Bateman were laid to rest amid a massive outpouring of public grief.

Alan Winterbourne's memorial was private. Afterwards, about 450 people, mostly members of the congregation, attended the memorial service at Trinity Lutheran. Friends of Ila's played classical sonatas and sang "Blowin' in the Wind." The eulogies were marked by a tearful refrain: "It wasn't the Alan we knew." Pastor Hall spoke of a dying, fragmented society, in which "we are all guilty of the brokenness" but promised peace in the arms of Jesus.

Months later, Hall, like most who knew Alan, was still struggling to reconcile the young man's horrific actions with his kind, gentle persona. "What he did was an act of total despair," the pastor says. "Ever read Kierkegaard? He said that despair is a sickness unto death. I think that's what happened. He died inside."

And so Alan Winterbourne, who dreamed of success but lived with failure, entered the ranks of mass murderers. The final irony is that these lost souls, who seek attention for their grievances through random violence, are defeated even in death. For the fears and frustrations that drove them to commit their desperate acts soon fade from memory, as do their names. In the end, only the geographical signposts of the carnage left in their wake linger on. The San Ysidro McDonald's. The Stockton schoolyard. The Oxnard unemployment office. ■ ■ ■

Colophon

Wired is designed and produced digitally.

Our thanks to the following companies:

Hardware

Apple Macintosh Quadra personal computers; Silicon Graphics Iris Indigo, Radius Precision Color Pro two-page display systems, Precision Color Calibrators, Video Vision, PhotoBooster, and Rocket accelerators; Dataproducts LZR 1580 Laser Printer and Jolt PS Color Printer; Nikon Coolsan 35 mm film scanner; Hewlett-Packard ScanJet IIc; APS storage media; MicroNet DAT backup, 1- and 2-gigabyte drives; Pinnacle Micro Sierra 1.3-gigabyte magneto-optical drive; Global Village TelePort and PowerPort Gold modems.

Software

Page layout and illustration: QuarkXPress; Adobe Illustrator, Dimensions, and Photoshop; Kai's Power Tools and XAOS Tools Paint Alchemy Photoshop plug-ins; Altsys Fontographer; Alias Sketch; Electric Image Animation System.

Typography: Text: Adobe Myriad and Walbaum Book. Heds: Adobe, FontShop, [T-26], House Industries.

Graphics Support: Aldus Fetch; Second Glance ScanTastic PS Photoshop Plug-in; Equilibrium Technologies DeBabelizer; Adobe Premiere.

Networking: CE Software QuickMail; StarNine; Dantz Retrospect Remote; Unix weenie documentation; O'Reilly & Associates.

Electronic Prepress and Printing by

Danbury Printing & Litho, Danbury, Connecticut

Color separations are made on the DS America 608 scanner directly into the 10-track Scitex system. Low-res EPS images are provided for page layout. Preliminary color correction is performed on the Scitex Imager and proofed on the actual paper stock, using the Kodak Approval digital color proofing system. Additional electronic prepress is performed in-house at *Wired*, using scans from the HP ScanJet IIc, Nikon Coolsan, and Kodak PhotoCD. Composed QuarkXPress pages are converted to PostScript and ripped via the Scitex Universal Gateway to the Scitex system's Micro Assembler, where the low-res images are automatically replaced with color-corrected, high-resolution scans. Composed digital proofs are submitted for final approval. Final film is plotted on an Eray. Printed on a Harris-Heidelberg M-1000 web press.

Printed on Recycled Paper from Repap/Midtec

Cover: 80# Lithofect Plus Dull Cover

Text: 45# Multiweb matte

The music that helped get this magazine out:

Miles Davis & Quincy Jones, *Miles & Quincy, Live at Montreux*; Screaming Trees, *Sweet Oblivion*; West Side Story, *Columbia Records soundtrack*; Beastie Boys, *Ill Communication*; Roy Hargrove, *The Tokyo Sessions*; Frank Zappa, *Apostrophe/Overnight Sensation*; Bill Frisell, *This Land*; 7 Year Bitch, *Sick 'Em*; The Benedictine Monks of Santo Domingo de Silos, *Chant*; Smashing Pumpkins, *Siamese Dream*; Steve Tibbetts, *The Fall of Us All*; Afghan Whigs, *Gentlemen*; Kristen Hersh, *Hips and Makers*; Atlantic Jazz Legend Sampler, *Rhino Records compilation*; William Orbit, *Strange Cargo III*; Bill Laswell, *Ambient Dub, Vol. 1*; Overwhelming Colorfast, *Two Words*; Stan Getz, *Getz Au Go Go*; Soundgarden, *Superunknown*; Robert Fripp & Brian Eno, *The Essential Fripp and Eno*.

Drugs of choice: Wasabi, SPF 15, Enerjets, Animal Cookies, Endo, Ma Huang, Tiger Balm, sleep.

WIRED, June 1994. Volume 2, Issue Number 6. WIRED (ISSN 1059-1028) is published monthly by WIRED USA, Ltd., 544 Second St., San Francisco, CA 94107-1427. Subscription rates for US and Possessions are \$39.95 for 12 issues, \$71 for 24 issues. Application to Mail at Second-Class Postage Rates is pending at San Francisco, CA, and additional mailing facilities.

POSTMASTER: Send address changes to WIRED, 544 Second St., San Francisco, CA 94107-1427.

W I R E D W A R E

Messenger Bag

Large-capacity shoulder bag with adjustable straps, Velcro-close flaps, buckles, reflectors, and sporty *Wired* logo. Totes any load – books, binders, and laptops. Heavy-duty weather-resistant nylon Cordura lined with waterproof, vinylized pack cloth; rein-forced shoulder straps.

Wired Cap

Reversibleware – *Wired* logo bright and brazenly embroidered on the front with "Get Wired" placed proudly on the back. Black, heavy cotton twill, six-panel baseball cap perfect for everyday or everynight wear. One size fits all – two looks to choose from.

Street Cred Sweat Shirt

Credibility in the streets. Get your *Wired*-logoed, Street Cred-icoded sweat shirt exclusively through *Wired*. Ultrasoft, fleece-lined, heavy-duty 50 percent cotton sweats with inset sleeves. Choose from two styles: hooded with pocket or crew neck. Amaze your friends with your fashion sensibilities. L and XL.

Wired Logo T-Shirt

Sport your favorite logo. Classic design by infamous *Wired* Creative Director John Plunkett. Choose from long- or short-sleeved black, high-quality 100 percent cotton shirts in L and XL.

PHOTOS: WILLIAM FAULKNER

Call 800 50 WIRED (769 4733) or e-mail (ware@wired.com)

Street Cred Sweat Shirt	Size	Price	Quantity	Total
☐ Hooded with pocket	☐ L ☐ XL	\$30	_____	_____
☐ Crew neck	☐ L ☐ XL	\$25	_____	_____

Wired T-shirts/Sleeves

☐ Logo	☐ short	☐ L ☐ XL	\$12	_____
	☐ long	☐ L ☐ XL	\$17	_____
☐ The Menu	☐ short	☐ L ☐ XL	\$20	_____

Wired Cap

☐ (one size fits all)	\$18	_____
--	------	-------

Wired Messenger Bag

☐ 14"x 8"x 11"	\$60	_____
---------------------------------------	------	-------

Postage and handling US \$5.00

California residents please add 8% sales tax _____

Total within US _____

Additional postage for Canada \$6.00 (plus GST)

Additional postage outside US \$15.00

Total outside US _____

Credit Card Information

☐ American Express ☐ Visa ☐ MasterCard

Card number _____ Exp. date _____

Signature _____

Name _____

Address _____

City, State, Zip _____

Phone _____

Orders must include payment. Products subject to availability and may change without notice. Please allow four weeks for delivery. All checks must be in US dollars and drawn on a US bank. Fax: +1 (415) 904 0669. Internet: ware@wired.com. Mail: Wired, PO Box 191826, San Francisco, CA 94119-9866.

Message 12:
Date: 6.1.94
From: Nicholas Negroponte
nicholas@media.mit.edu
To: lr@wired.com
Subject:

Less Is More: Interface Agents as Digital Butlers

Al Gore need not be right or wrong in his conception of details. It almost doesn't matter whether he calls it an information superhighway, an infobahn, or a National Information Infrastructure. What matters is his personal and sincere interest in computers and communications and the fact that his enthusiasm has raised our popular consciousness of telecommunications. The media cacophony over phenomena like the Internet fosters an open architecture and emphasizes access by all Americans.

The clamor, however, has perpetuated a tacit assumption that more bandwidth is an innate, a priori, and (almost) constitutional good. The right to 1,000 channels of TV! Continental Cable,

body of information that is orders of magnitude larger than anything I can digest. To achieve this we use a technique known as "interface agents." Imagine a future where your interface agent can read every newspaper and catch every broadcast on the planet, and then, from this, construct a personalized summary. Wouldn't that be more interesting than pumping more and more bits into your home?

Guides

Why do people pay 85 cents to find out whether their one daily lottery ticket won? *TV Guide* has been known to make larger profits than all four networks combined. What do these things tell

The key to agent-based systems is learning. It is not a matter of a questionnaire or a fixed profile. Agents must learn and develop over time, like human friends and assistants.



the local cable company in Cambridge, Massachusetts, now offers Internet access at 500,000 bits per second. With that service, *The Wall Street Journal* takes sixteen seconds to transmit in its entirety (as structured data mostly, not fax, please!). When fiber reaches the home, by some estimates, we will have access to as much as 100 billion bits per second. Hmmm. Most people generally make a false assumption that more bits are better. More is more.

In truth, we want fewer bits, not more. Our needs fall along a spectrum. Consider a newspaper: Our requirements are very different on Monday morning from what they were on Sunday afternoon. At 7 a.m. on a workday, you are less likely to be interested in browsing stories. Serendipity just does not play a key role then. In fact, you would most likely be willing to pay *The New York Times* US\$10 for ten pages vs. \$1 for 100 pages. If you could, you would opt for a heavy dose of personalized news.

It's simple: Just because bandwidth exists, don't squirt more bits at me. What I really need is intelligence in the network and in my receiver to filter and extract relevant information from a

you? It says that the value of information about information can be greater than the value of the information itself. From that and other similar observations (American Airlines makes more from its reservation system than from carrying passengers) I am willing to project an enormous new industry based on a service that helps navigate through massive amounts of data.

When we think of new information delivery, we tend to cramp our thoughts with concepts like "info grazing" and "channel surfing." These concepts just do not scale. With 1,000 channels, if you surf from station to station, dwelling only three seconds per channel, it will take almost an hour to scan them all. A program would be over long before you could decide whether it is the most interesting.

I am fond of asking people how they select a theatrical, box-office movie. Some pretend they read reviews. I hasten to interject my own solution – which is to ask my sister-in-law – and people quickly admit that they have an equivalent. What we want to build into these systems is a sister-in-law, an interface agent which is both an expert on movies and an expert on you.

Your Model of Its Model of Your Model of It

The key to agent-based systems is learning. It is not a matter of a questionnaire or a fixed profile. Agents must learn and develop over time, like human friends and assistants. It is not only the acquisition of a model of you; it is using it in context. Timing alone is an example of how human agents distinguish themselves. But it is all too easy to wave your hand and say "learning." What constitutes learning?

The only clue I have found goes back two decades to the work of the English cybernetician Gordon Pask, who taught me to look at the second- and third-order models. In human-to-computer interaction, your model of the computer is less telling than its model of your model of it. By extension, your model of its model of your model of it is even more critical. When this third-order model matches the first (your model of it), we can say that you know each other.

Swiss Banking of Network-Based Agents

All of us are quite comfortable with the idea that an all-knowing agent might live in our television set, pocket, or automobile. We are rightly less sanguine about the possibility of such agents living in the greater network. All we need is a bunch of tattletale or culpable computer agents. Enough butlers and maids have testified against former employers for us to realize that our most trusted agents, by definition, know the most about us.

I believe there is a whole new business in confiding our profiles to a third party, which will behave like a Swiss bank. I fear this will not be one of my credit card companies, which have sold my name for all sorts of purposes, and have thus shot themselves in the foot. It must be a credible third party, perhaps a local telephone company, perhaps a long distance company like AT&T, perhaps a new venture altogether. What we should be looking for is an entity which is able and willing to keep our identities confidential while at the same time passing along newsworthy advertising and information.

Such services will only work with a high degree of machine learning. While it is important to postulate such learning, how does this relate to human learning?

Next Issue: Learning vs. Teaching

EXPLORE the INTERNET!



DELPHI is the only major online service to offer you **full access to the Internet**. And now you can explore this incredible resource with **no risk**. You get **5 hours** of evening/weekend access to try it out for **free!**

Use **DELPHI's** Internet mail gateway to **exchange messages** with over **10 million people** at universities, companies, and other online services such as CompuServe and MCI Mail. **Download programs** and files using **FTP** or connect in real-time to other networks using **Telnet**. You can also **meet people** on the Internet. **Internet Relay Chat** lets you "talk" with people all over the world and **Usenet News** is the world's largest bulletin board with over 3500 topics!

To help you **find the information you want**, you'll have **direct access** to powerful search utilities such as **"Gopher," "Hytelnet," "WAIS,"** and **"the World-Wide Web."** If you aren't familiar with these terms, don't worry; **DELPHI** has **expert online assistants** and a large collection of help files, books, programs, and other resources to help get you started.

Over **600 local access numbers** are available across the country. Explore **DELPHI and the Internet** today.

You'll be amazed by what you discover.

5 HOUR FREE TRIAL

Dial By Modem 1-800-365-4636, Press return once or twice.
At Username, enter JOINDELPHI. At Password, Enter WRD46

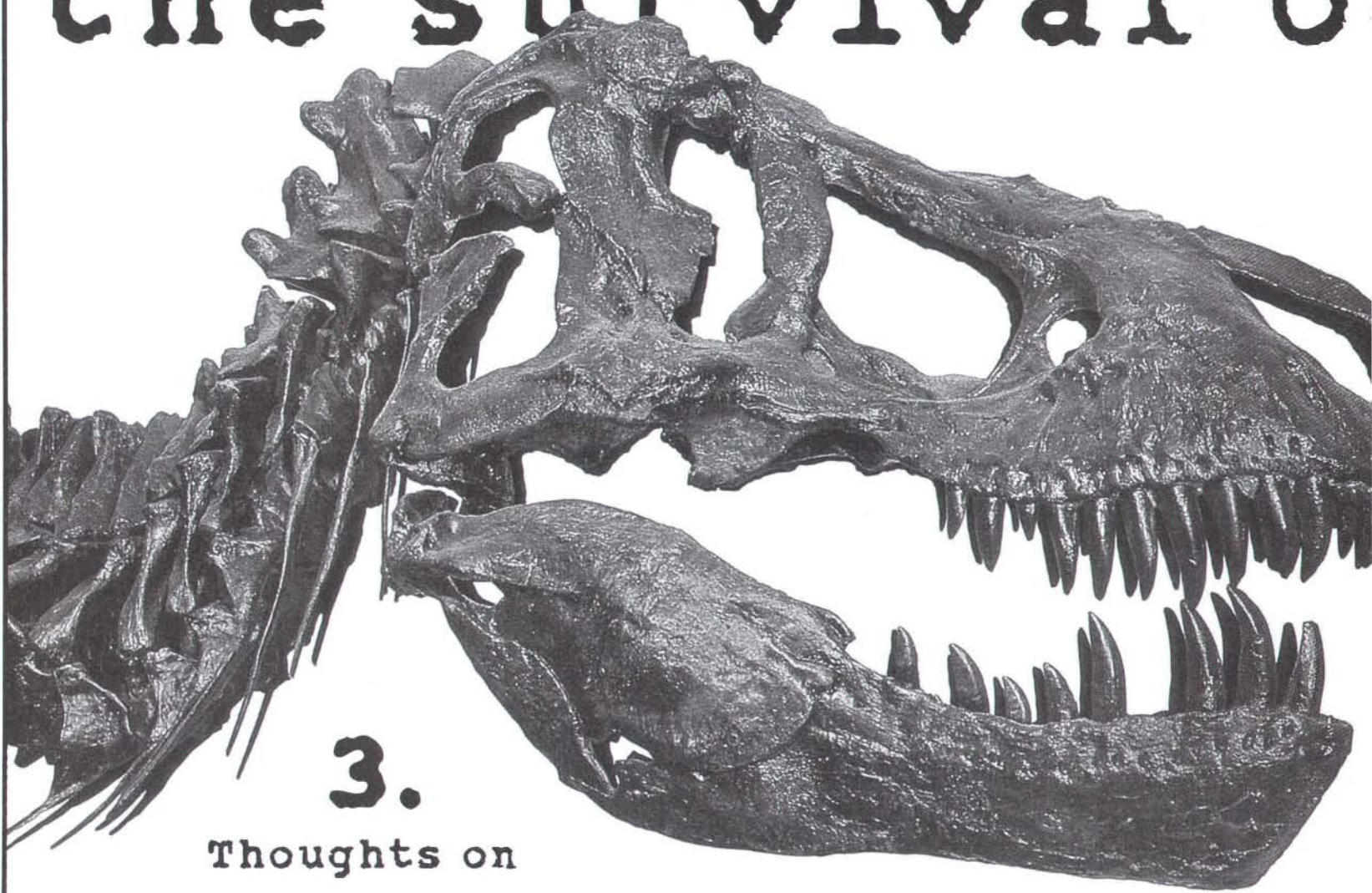
Complete details are provided during the toll-free registration

DELPHI
INTERNET

Questions? Call 1-800-695-4005. Send e-mail to
INFO@delphi.com

Attention Current Internet Users: See what DELPHI can offer you! Stock quotes, Grolier's Encyclopedia, newswires, and hundreds of other services are just a few keystrokes away. Telnet to delphi.com and enter the username and password above for a free trial.

The theory of obviously with the survival of



3.

Thoughts on international business.

Charles Darwin is not to blame. His theory was not about the survival of the biggest, but of the fittest. About the ability to adapt. Yet in business life evolution has commonly been simplified to growth and

size, up to a level where giants stumbled. Since then we have come to realize that for companies too, the future lies in their ability to fit into an ever-changing society. Where flexibility is becoming more important than size. And the power of control is beaten by the strength of

f evolution asn't about f the biggest.

creativity. This calls for inspiration and motivation rather than domination, and thus for new ways of working together. A need also reflected by the power shift in automation, where centralized thinking

is rapidly being replaced by the need for integrated flexibility.

We know, because we are Origin. A cross-border supplier of information technology. With some 5000 specialists working

from 100 offices in 20 countries. On assignments entrusted to us

due to our skills and resources, but mostly because we understand that

automation is only a tool. And that the real job is to link up people:

person by person, discipline by discipline, country by country.

This calls for sophisticated technical skills, but even more for a

deep understanding of human behavior and needs. That's why we

operate from so many different places. With each office essentially thriving

on its own skills, but linked up with colleagues all over the world.

By both human and electronic networks as well as worldwide quality

standards and working methods. That is the way we work, and that's

what we try to achieve for our clients, as

a partner at both local and international

level. For nearly everything in informa-

tion technology you can dream up.

From local assistance to cross-

border systems integration and from

process management through administrative systems and advanced

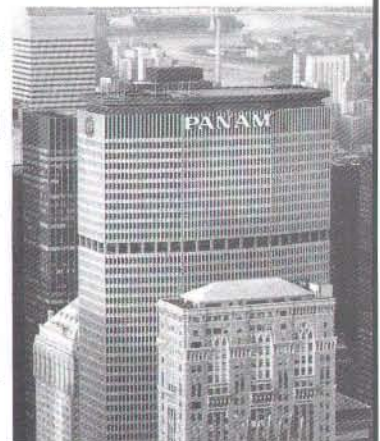
executive information systems to advice on business procedures.

So, for more human energy into information technology, link up with

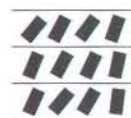
Origin. You can call us in The Netherlands on +31 30 911911.

Or get in touch with the team

of Originals nearest to you.



*Dealing with changes
before they deal with you.*



ORIGIN

TECHNOLOGY
IN BUSINESS

Human energy into information technology.



ABSOLUT BROOKLYN.

FOR GIFT DELIVERY OF ABSOLUT® VODKA (EXCEPT WHERE PROHIBITED BY LAW) CALL 1-800-243-3787. PRODUCT OF SWEDEN. 40 AND 50% ALC/VOL (80 AND 100 PROOF). 100% GRAIN NEUTRAL SPIRITS. ABSOLUT COUNTRY OF SWEDEN VODKA & LOGO, ABSOLUT, ABSOLUT BOTTLE DESIGN AND ABSOLUT CALLIGRAPHY ARE TRADEMARKS OWNED BY V&S VIN & SPRIT AB. ©1994 V&S VIN & SPRIT AB. IMPORTED BY CARILLON IMPORTERS, LTD. TEANECK, N.J.